Comment Letter CCWD1

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February 7, 2006

Ms Sharon McHale
U.S. Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825

Mr. Paul Marshall,
California Department of Water Resources
Bay Delta Office
1416 Ninth Street
Sacramento, CA 95814

Re: Draft Environmental Impact Statement/Environmental Impact Report for the South Delta Improvements Program

Dear Ms McHale and Mr. Marshall:

Contra Costa Water District (CCWD) appreciates the opportunity to submit comments on the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) prepared by the California Department of Water Resources and the United States Department of the Interior, Bureau of Reclamation, for the proposed South Delta Improvements Program (SDIP). CCWD is an urban water agency charged with providing a reliable supply of high quality drinking water to approximately 500,000 people throughout north, central and eastern Contra Costa County. CCWD depends on the Sacramento-San Joaquin Delta for its water supply, and it is directly and substantially affected by projects such as the SDIP that degrade water quality at its Delta intake locations.

The SDIP – which includes installing permanent gates in the Delta and increasing State Water Project pumping – would have a dramatic, negative impact on CCWD's drinking water supply and its ability to provide high quality water to its many customers. The SDIP would make the water at CCWD's Delta intakes saltier – salty water not only tastes bad, it can also have serious health effects, by reacting with disinfectants to form harmful disinfection by-products. CCWD1-1

Salty water in the Delta also negatively impacts CCWD's Los Vaqueros Reservoir. CCWD ratepayers paid $450 million to construct the reservoir in order to improve the quality of water delivered by CCWD and improve the reliability of the emergency water supply available to CCWD. The SDIP would cause an effective loss of 12,000 acre-feet of Los Vaqueros Reservoir storage, eliminating 12% of the $450 million investment made by CCWD customers. Installing the permanent gates alone, without any increased pumping, would cause a loss of nearly 5% of the reservoir's storage capacity. CCWD1-2

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The DEIS/EIR utterly fails to address the SDIP's impacts on drinking water and therefore fails to comply with the requirements of both the California Environmental Quality Act and the National Environmental Policy Act. One of the most important obligations established by these laws is the requirement to provide a fair and accurate disclosure, so that the public and the decision-makers are fully informed about the project's environmental consequences. But instead of accurately disclosing the project's impacts, the DEIS/EIR relies on unsound methodologies that serve only to mask the significant, negative effects that would result from the SDIP. As a result, the DEIS/EIR fails even to consider, let alone propose, mitigation measures that are vitally needed to protect drinking water for hundreds of thousands of Californians. **CCWD1-3**

The attachments to this letter contain our detailed comments on the DEIS/EIR. To provide just a few examples of the serious flaws in the environmental analysis:

- The DEIS/EIR relies on long-term annual averaging to minimize both short-term and seasonal impacts. DWR's own water quality modeling shows that the SDIP will cause chloride concentrations at CCWD's Delta intakes to increase by as much as 148 milligrams per liter (mg/L) on a daily basis, which is clearly significant given CCWD's goal of delivering water to its customers with a chloride concentration of no higher than 65 mg/L. **CCWD1-4**

- The DEIS/EIR sweeps under the rug the significant impacts of installing permanent gates in the Delta, based on the dubious logic that these impacts are not substantially different from the impacts that already occur as a result of DWR's temporary barriers, which were designed merely as an interim test project to assist in the design and development of the permanent gates that are now proposed for approval. **CCWD1-5**

- The DEIS/EIR acknowledges that increased pumping will pave the way for additional water transfers, resulting in yet more Delta exports, but it fails to disclose the water quality effects resulting from these reasonably foreseeable transfers. **CCWD1-6**

- While the SDIP represents merely the first step in increasing State Water Project pumping, the DEIS/EIR improperly segments the analysis by ignoring future increases that are planned under the CALFED program. **CCWD1-7**

Water quality in the Delta has been substantially degraded over the years by agricultural dischargers, urban development, and increased diversions of Delta water. The SDIP will exacerbate this already grave situation. CCWD has repeatedly expressed its concerns to DWR concerning the potential for significant water quality impacts. We provided comments on two previous draft environmental documents for this project, in 1990 and 1996, and we have reiterated our concerns during the preparation of the current EIS/EIR. But after 15 years and three draft environmental documents, the SDIP's adverse water quality impacts have not been adequately disclosed, significant impacts have been hidden by arbitrary and unreasonable methodologies, and mitigation for these impacts has yet to be considered. The Draft EIS/EIR **CCWD1-8** **CCWD1-9**

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needs to be substantially revised and the revised draft needs to be recirculated for another round of public review and comment.

The SDIP should only proceed as part of a balanced Delta Improvements Package (DIP) that also improves drinking water quality. Balanced implementation of water supply, water quality, ecosystem, and levee improvements is the cornerstone of the CALFED effort. The SDIP will improve water supply, and will improve water quality for some agricultural uses, but it will degrade drinking water quality and exacerbate the current lack of balance in CALFED accomplishments. The CALFED DIP provides a mechanism to ensure that the SDIP goes forward as part of a package that provides necessary water quality improvements. Since both the California Department of Water Resources and the U.S. Bureau of Reclamation participate in CALFED and support the DIP and the concepts behind it, they should propose the SDIP only as a part of the complete DIP, rather than as a stand-alone project with significant unmitigated water quality impacts.

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CCWD looks forward to your responses to our comments, including the detailed comments contained in the attachments that follow. We would be happy to work with you to find ways to avoid or mitigate the SDIP's water quality impacts. If you would like to discuss this, or if you have any questions regarding CCWD's comments, please call me at (925) 688-8187.

Sincerely,

Richard A. Denton
Water Resources Manager

RAD/wec

Attachments

A. General comments on the inadequacies of the DEIS/EIR
B. CCWD operations and facilities
C. Additional page-by-page comments on the DEIS/EIR
D. Additional comments on fisheries impacts of SDIP
E. How the SDIP affects water quality at CCWD's intakes
F. The impact of the SDIP on CCWD operations and delivered water quality
G. Data regarding the impacts of the SDIP on water quality at CCWD's Delta intakes
H. Temporary Barriers Operating Schedule
I. Previous CCWD Correspondence regarding South Delta Barriers and Exports and Related Letters from Other Agencies
J. Contra Costa Times series on "Delta in Decline"

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bcc: Walter J. Bishop
Greg Gartrell
Jerry Brown
Leah Orloff
Lucinda Shih
Patty Friesen
Bob Maddow
Barbara Schussman (BM)
Marc Bruner (BM)

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Attachment A

General Comments on the Inadequacies of the Draft EIS/EIR

The Draft EIS/EIR suffers from a number of serious flaws under the National Environmental Policy Act and the California Environmental Quality Act, and it fails to provide a true and complete picture of the harmful effects the SDIP will have on the environment. Among other deficiencies, the Draft EIS/EIR:

(a) Uses an inappropriate "baseline" that masks the SDIP's negative environmental effects;

(b) Fails to include an adequate no action alternative;

(c) Improperly segments the environmental analysis by failing to study all of the components and reasonably foreseeable effects of the SDIP;

(d) Fails to provide an adequate analysis of the impacts on water quality resulting from the SDIP;

(e) Fails to provide an adequate analysis of the project's negative impacts on fish, and on the delta smelt in particular; and

(f) Fails to provide a full and accurate account of the SDIP's cumulative impacts.

In addition, while the SDIP is a key component of the CALFED program, it is not being implemented in a manner that is consistent with the requirement for balanced progress in *all* elements of that program, including actions that are needed to improve water quality in the Delta. The SDIP, which will substantially degrade water quality at CCWD's Delta intakes, should not move forward unless and until projects that enhance water quality – such as those listed in the CALFED Delta Improvements Package – also move forward.

The Draft EIS/EIR needs to be redone to correct the numerous flaws in the environmental analysis, and a revised draft needs to be recirculated for another round of public review and comment. Each of the deficiencies in the Draft EIS/EIR is discussed individually below.

CCWD is providing detailed comments at this time on both Stage 1 (physical/structural component) and Stage 2 (operational component) of the SDIP. Many of the comments below apply to both Stage 1 and Stage 2.

With respect to Stage 1, because of the serious flaws in the environmental analysis, and in light of the environmental impacts that have not been fully disclosed, analyzed or mitigated, a final decision on Stage 1 cannot be made until the environmental analysis is revised.

The same is true for Stage 2. CCWD reserves the right to bring a challenge of the EIS/EIR regarding the environmental analysis and findings relating to Stage 2 at the time the EIS/EIR is certified. In accordance with the representations made in the Draft EIS/EIR, CCWD also reserves the right to submit additional comments on any aspect of the SDIP operational

component at such time when a final decision on Stage 2 is proposed. These additional comments would not need to be limited to issues raised in a future environmental review, and may therefore include any Stage 2 issues relating to the analyses and findings made in connection with the present EIS/EIR. CCWD also reserves the right to bring any legal challenge related to the SDIP operational component at such time when a final decision on Stage 2 is made. Any such legal challenge would not need to be limited to issues raised in a future environmental review, and may therefore include a challenge to the analyses and findings made in connection with the present EIS/EIR.

I. The EIS/EIR Uses An Improper Baseline For Measuring The Environmental Impacts Of The SDIP

A fair and accurate description of the environmental setting is a crucial component of any valid environmental analysis. The environmental setting serves as the "baseline" against which the project's impacts are measured, in order to determine whether they are significant. Here, the Draft EIS/EIR uses an improper baseline by comparing the impacts of the SDIP against the impacts of the South Delta Temporary Barriers project, instead of comparing the SDIP against the true base case: the physical conditions in the Delta without any barriers. The use of an improper baseline causes the Draft EIS/EIR to understate significantly the true nature and extent of the project's environmental impacts.

The Draft EIS/EIR recognizes that the temporary barriers were intended only as an "interim," "short-term," "testing" project to assist in the design and development of permanent gates. Draft EIS/EIR at p. 1-17. This is confirmed by the prior permitting and environmental review documents relating to the temporary barriers project. These documents show that the goal of the project during the first five years (1991-95) was to test the effectiveness of the barriers and to gather information concerning the barriers' potential effects on vegetation and fisheries. The principal purpose of continuing the project for an additional five years (1996-2000) was to test the Grant Line Canal barrier and to complete further monitoring, in order to provide information for evaluating and finding permanent solutions to the fisheries resources and water use problems in the south Delta. When the prior permits for the project expired in the fall of 2000, DWR requested new permits to continue the use of the temporary barriers as an interim action until 2007, in order to allow additional monitoring to assist in the development of long-term solutions to these issues, through the construction of permanent barriers (or their functional equivalent). The Draft EIS/EIR acknowledges that the current state and federal permits for the temporary barriers project expire in 2007.

CCWD1-11

Thus, the temporary barriers project has been designed and authorized specifically to provide testing and information needed to build *this very project*. It defies logic to conduct an interim test project, and then incorporate the test project's negative environmental impacts into the baseline for measuring the impacts of the very project the test project was designed to test for. Yet, this is exactly what the Draft EIS/EIR does.

For example, the Draft EIS/EIR concludes that construction of the permanent gates will result in less-than-significant impacts on fish in part because "the area disturbed by construction of gates would be similar to the existing footprint of the temporary barriers." Draft EIS/EIR at p. 6.1-1. The Draft EIS/EIR similarly concludes that "Operation of the permanent gates would have less-than-significant impacts given that effects on net and tidal flow would be similar to conditions with the existing temporary barriers. . . ." Id.

Further, the Draft EIS/EIR fails to conduct modeling to compare the water quality impacts of the SDIP with the water quality impacts of a true "no barriers" base case. CCWD conducted this modeling and found that the water quality impacts of implementing the SDIP are much greater than what is described in the Draft EIS/EIR.

For example, as demonstrated in Attachment F and as explained more fully below, implementation of Alternative 2A – when compared against the baseline used in the Draft EIS/EIR – would result in higher salinity levels at CCWD's Delta intakes that have significant impacts on the Los Vaqueros Reservoir, which CCWD operates to ensure a reliable supply of high quality (i.e., low salinity) drinking water for its 500,000 customers. In particular, implementation of Alternative 2A would result in an effective loss of about 12,000 acre-feet of the reservoir's storage capacity – a loss of more than 12%. This is clearly a significant impact on CCWD. Comparing the SDIP alternatives against the true no-barriers base case results in the loss of an additional 1,000 to 2,000 acre-feet from Los Vaqueros storage capacity, thereby increasing the significant impacts of the SDIP. The failure to use the proper environmental baseline, in combination with the other analytical flaws described below, causes the Draft EIS/EIR to understate significantly the salinity impacts to CCWD and its ability to provide drinking water to its customers. **CCWD1-11**

Thus, the Draft EIS/EIR uses the temporary barriers either to minimize, or simply not to study at all, the true effects of implementing the SDIP. In addition to violating the requirements under CEQA and NEPA for full disclosure of a project's significant environmental effects, the approach used in the Draft EIS/EIR provides a perverse incentive to public agencies: implement a test project and then discount the impacts of making the test project permanent, based on the circular logic that the effects of making the test project permanent are not substantially different from the effects of the test project.

The use of the temporary barriers as the "existing" environmental baseline is also inappropriate because the barriers are physically removed and reinstalled each year. They are, therefore, not permanent structures that are part of the physical environment; rather, they are only temporary structures and DWR must make the decision each year to reinstall them. And there is even less of a basis for concluding now that the temporary barriers will exist as part the physical environment after 2007 (which is two years before the permanent gates are proposed to be completed), since the permits for the temporary barriers will soon expire and new discretionary decisions will have to be made to permit their continued removal and reinstallation. **CCWD1-12**

To provide a fair and accurate picture of the potentially significant impacts the SDIP will have on fish, water quality, and other environmental resources, the Draft EIS/EIR must be revised to compare the impacts of the SDIP to the conditions without the SDIP – which necessarily means not including in the baseline the interim temporary barriers test project leading up to the SDIP.

II. The EIS/EIR Does Not Contain An Adequate No Action Alternative

For similar reasons, the Draft EIS/EIR does not contain an adequate no action alternative. The Draft EIS/EIR assumes that if the SDIP were not implemented, the temporary barriers project would continue to be implemented over the long term. See, e.g., Draft EIS/EIR at p. 2-12. This assumption is built into the impact analyses for the no action alternative. But the true no action alternative is an alternative without any barriers at all.

From their inception, the temporary barriers have been designed as a project of limited duration, not as a permanent or even long-term action. Further, the permits for the temporary barriers will soon expire, and future discretionary approvals will be required from several agencies to continue the project. As part of these discretionary reviews, presumably a no action alternative would be explored that would not reauthorize the temporary barriers. Indeed, the Army Corps of Engineers considered such a no action alternative as part of its 2001 decision document for the three agricultural flow barriers. The Draft EIS/EIR for the SDIP should similarly consider a true no action alternative. CCWD1-13

The purpose of the no action alternative is to allow the public and the decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. CEQA Guidelines § 15126.6(e). Because the Draft EIS/EIR fails to include an adequate no action alternative, it fails to fulfill its critical role of informing the public and the decision-makers about the environmental consequences of the SDIP.

III. The EIS/EIR Improperly Segments the Environmental Analysis

The EIS/EIR is also deficient for another, independent reason: it improperly segments, or "piecemeals," the environmental analysis. The rule against segmentation is designed to ensure that an agency thoroughly considers the environmental impacts of the entire project before granting its approval, so that environmental considerations are not submerged by chopping a large project into smaller pieces, with fewer negative impacts.

The Draft EIS/EIR violates the rule against segmentation in three different ways.

1. Failure to analyze renewal of temporary barriers project.

First, the Draft EIS/EIR fails to include an analysis of the environmental impacts of continuing the temporary barriers project pending the proposed installation of the permanent gates (and instead simply assumes that the temporary barriers are part of the environmental baseline). As explained above, new discretionary permits will be required for the temporary barriers in 2007, CCWD1-14

which is during the construction period planned for the permanent gates. Given the intimate relationship between the temporary barriers and the permanent gates – in terms of what the temporary barriers are designed to do, their geographic location, the timing of the anticipated permit renewals, and the fact that DWR is the proponent of the temporary barriers project – the Draft EIS/EIR needs to evaluate the environmental effects of renewing the temporary barriers, including the water quality effects on CCWD's Delta intakes.

Under CEQA, "project" is defined to mean "the whole of the action" that may result in either a direct or a reasonably foreseeable indirect physical change in the environment. CEQA Guidelines § 15378(a). The definition of "project" is given a broad interpretation in order to maximize protection of the environment. By failing to analyze the impacts of renewing the temporary barriers in 2007, DWR has separately focused on isolated parts of the whole action that may affect the physical environment in the Delta. This is improper and the analysis in the Draft EIS/EIR needs to be redone. **CCWD1-14**

2. Failure to analyze increase in SWP export pumping to 10,300 cfs.

Second, the Draft EIS/EIR violates the rule against segmentation by limiting the environmental analysis to the increase in State Water Project export pumping to 8,500 cfs, and by failing to evaluate further reasonably foreseeable increases up to 10,300 cfs, which is the pumping capacity of the SWP Banks Pumping Plant. The CALFED Record of Decision (at pp. 48-50) identifies the increase in SWP pumping to 10,300 cfs as a component of the SDIP. The CALFED ROD further explains that the increase to 10,300 cfs will be accomplished, after pumping is increased to 8,500 cfs, through two sets of actions: installation of permanent operable barriers, and construction of new fish screens at Clifton Court Forebay. DWR is now chopping the SDIP into pieces, by analyzing only the increase to 8,500 cfs and the operable barriers, and by not evaluating the impacts of the ultimate increase to 10,300 cfs. Because the EIS/EIR analyzes only the first phase of increased pumping at the SWP Banks Plant, and not the whole of the action that may affect the environment, it is legally inadequate.

In *Laurel Heights Improvement Assn. v. Regents of Univ. of California*, 47 Cal. 3d 376, 396 (1988), the California Supreme Court ruled that CEQA requires an analysis of the environmental effects of a future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. Here, the ultimate expansion to the maximum pumping capacity of 10,300 cfs is a reasonably foreseeable consequence of implementing the project, and it would undoubtedly change the scope of the project and its environmental effects, including effects on water quality at CCWD's Delta intakes. Increasing pumping to 8,500 cfs and installing permanent gates are necessary steps for further increases in pumping up to 10,300 cfs. The SDIP therefore starts down the road of achieving the full pumping capacity of the SWP Banks Pumping Plant. The time to analyze the impacts of this full pumping capacity is now, before resources are committed to go down that road. **CCWD1-15**

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The Draft EIS/EIR asserts that increasing SWP pumping to 10,300 cfs is speculative because DWR has not yet determined either how operation of the SWP pumps would change with 10,300 cfs or what the priority would be for the increased pump capacity. But the fact that DWR has not yet decided *precisely* how the increased pumping will operate is irrelevant. See *Laurel Heights*, 47 Cal. 3d at 396-97 (argument that agency did not know "precisely how" expansion of use would occur was "beside the point"; CEQA requires analysis if "the general types of future activity at the facility are reasonably foreseeable").

The Draft EIS/EIR also asserts that the feasibility of the 10,300 cfs project is unknown until the effectiveness of a new fish facility is tested and proven. But the Draft EIS/EIR indicates that actions short of a new fish facility may be undertaken to allow for pumping increases to 10,300 cfs. Thus, the Draft EIS/EIR explains that improvements to the existing Tracy Fish Collection Facility are currently under consideration and that some improvements will be implemented as soon as this year. Draft EIS/EIR at p. 1-6.

CCWD1-15

The failure to analyze the increase in pumping to 10,300 cfs as part of the SDIP is not cured by the discussion of cumulative impacts, which cursorily asserts that the water quality impacts of this increase would not be significant. The entire analysis of this critical issue consists of one sentence: "Operating SWP Banks facility at a future permitted capacity of 10,300 cfs is not expected to significantly affect south Delta salinity, DOC and DO conditions because operations at this pumping capacity would be similar to operations described for SDIP at 8,500 cfs, and current Delta outlflow and water quality criteria would be required at an increased level of SWP pumping." Draft EIS/EIR at p. 10-28. But there are no data or analyses to support this summary assertion, which essentially posits that no significant water quality impacts would ever result from any incremental increases in SWP pumping – whether to 10,300 cfs, 11,300 cfs, or 12,300 cfs.

Equally important, the Draft EIS/EIR itself acknowledges that even increases in pumping to 8,500 cfs will raise salinity levels at CCWD's Delta intakes. Further, as demonstrated below and in CCWD's detailed technical comments, these increases in salinity will result in significant water quality impacts that negatively affect CCWD's operations and its ability to provide high quality drinking water to its more than 500,000 customers. Increasing SWP pumping further to 10,300 cfs would clearly result in further degradation of water quality.

The Draft EIS/EIR must be revised to quantify and disclose the impacts on water quality and other environmental resources of increasing SWP pumping to 10,300 cfs.

3. Failure to analyze the impacts of water transfers caused by the SDIP.

Third, the Draft EIS/EIR violates the rule against segmentation by failing to provide an adequate analysis of the impacts resulting from the water transfers that would be made possible by the SDIP. The Draft EIS/EIR recognizes that the SDIP could result in an increase in water transfers compared to those allowed under current conditions. See, e.g., Draft EIS/EIR at p. 5.1-17. As

CCWD1-16

shown in Figure ES-2, water transfers account for a substantial percentage of the additional Delta exports resulting from the SDIP. The Draft EIS/EIR, however, fails to include these water transfers in its modeling. See, e.g., id. at pp. 5.3-61 to 5.3-62 ("Water quality impacts for the SDIP alternatives have been evaluated with DSM2, based on CALSIM operational scenarios that did not include the potential future water transfers from existing upstream water districts, CVP contractors, or SWP contractors to south-of-Delta districts or water contractors."). Instead, the Draft EIS/EIR simply assumes that all future water transfers would be implemented "such that Delta water quality (i.e., salinity) would be protected (i.e., no increased salinity)." Id. at p. 5.3-62.

CCWD1-16

This type of conclusory finding is no substitute for data and analysis showing what the effects on salinity would be as a result of the additional water transfers made possible by the SDIP. The water transfers are clearly a reasonably foreseeable consequence of the SDIP – indeed, the Draft EIS/EIR quantifies the amount of additional exports due to water transfers resulting from each of the project alternatives. But it is impossible to tell from the modeling and analysis contained in the Draft EIS/EIR what the water quality impacts from the water transfers would be, or whether these impacts would be sufficiently mitigated. This violates the requirement to analyze the whole of the action and all of its potential effects on the physical environment. Put another way, DWR and Reclamation are proposing to approve the SDIP without disclosing all of the project's impacts.

CCWD1-17

The Draft EIS/EIR needs to be revised to quantify and disclose the water quality and other environmental impacts resulting from the water transfers that would not occur without the SDIP.

IV. The Analysis Of Water Quality Impacts Is Inadequate

The Draft EIS/EIR suffers from yet another fatal flaw: It fails to adequately disclose, and therefore mitigate, the SDIP's significant adverse impacts on water quality. Despite the large scale and controversial nature of the project, and the numerous comments submitted by CCWD to DWR over the years raising serious concerns about the negative water quality impacts of putting barriers in the south Delta and increasing SWP pumping, the Draft EIS/EIR remarkably finds there is not a single impact to water quality that is significant.

CCWD1-18

This finding is unsupported. In particular, the Draft EIS/EIR uses improper significance criteria, which mask the project's true impacts to CCWD's drinking water intakes. These impacts are significant and they must be adequately analyzed and mitigated. Because the Draft EIS/EIR fails to give a fair, accurate and complete picture of the SDIP's impacts on water quality, the analysis must be redone.

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A. The EIS/EIR Uses Improper Significance Criteria For Measuring The Adverse Water Quality Impacts Of The SDIP

The Draft EIS/EIR purports to use two different significance criteria for assessing the SDIP's water quality impacts: a monthly criterion and a long-term criterion. Under the monthly criterion, a simulated monthly change in a water quality variable that is less than 10% of the applicable numerical water quality criterion (or less than 10% of the measured or simulated mean value of the variable where no numerical criterion applies) is considered less than significant. According to the EIS/EIR, this is because such a simulated change "would not be greater than natural variability." Draft EIS/EIR at p. 5.3-21. Under the long-term criterion, a simulated increase in the 16-year average (1976-1991) of less than 5% over baseline conditions is considered in the Draft EIS/EIR to be less than significant. Id. at pp. 5.3-21 to 5.3-22.

CCWD has identified at least five serious problems with the significance criteria used in the water quality analysis. Each flaw is described below.

First, the use of a significance standard based on natural variability is inappropriate. In *Border Power Plant Working Group v. Dept. of Energy*, 260 F. Supp. 2d 997, 1022-23 (S.D. Cal. 2003), an Environmental Assessment (EA) prepared under NEPA determined that the projects at issue would increase the salinity of the Salton Sea by 0.142%. The EA concluded the impact would be less than significant, because the increase in salinity was within the natural range of variability.

The Court, however, found that the finding of insignificance was arbitrary and capricious, and that the EA failed to take a hard look at the impacts of the actions on Salton Sea as required under NEPA. The Court noted that Salton Sea is already a damaged resource because of too much salinity, and that recovery efforts were underway to reduce existing salinity levels. Emphasizing that a significance standard based on natural variability "makes no sense," the Court explained:

> The natural variability of water flow and salinity in the Sea has no connection to the projects at issue here. If the projects increase salinity in the Sea, it appears as though this increase will be in addition to, and completely independent of, any natural increase in salinity. Thus, the impacts of these projects might be thought of as simply moving the range of natural variability in the direction of increased threat. . . . Such a move does not argue against the significance of the impact, but rather argues strongly in favor of its significance.

CCWD1-19

Border Power, 260 F. Supp. at 1023 n.20.

The same principle holds true here. The Delta is a critically important resource whose water quality has already been damaged by agricultural discharges, urban development, and increased SWP pumping. CCWD's technical analysis of historical salinity levels in the Delta reveals that there has been substantial degradation of Delta water quality in the fall months since 1993.

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Indeed, water quality in the fall at CCWD's intakes in normal water years after 1993 is now as bad as the water quality in the fall in dry water years before 1993. The CALFED ROD recognizes the growing risks and concerns posed by contaminants and salinity that impair Delta water quality, and the need to address these problems through water quality improvements (which unfortunately have lagged behind water supply and conveyance projects). It also recognizes that CCWD takes its water for its 500,000 customers directly from the Delta, and is highly sensitive to variations in water quality. The increases in salinity at CCWD's Delta intakes that would be caused by the SDIP would be in addition to, and independent of, any natural variability in Delta salinity, and would move the range of natural variability in the direction of increased threats to CCWD's drinking water supplies. This militates in favor of a finding of significance, and shows that the significance standards used in the Draft EIS/EIR are arbitrary and unreasonable. **CCWD1-19**

Second, the use of monthly and 16-year averages hides the significant impacts that the SDIP would have on water quality at CCWD's Delta intakes. In particular, the Draft EIS/EIR fails to evaluate the *daily* increases in salinity that would be caused by the SDIP. But the daily data are critical in assessing the impacts of the SDIP on CCWD. CCWD's customers do not drink monthly or 16-year average water; rather, CCWD is charged with delivering high quality drinking water to its many customers on a daily basis, and it is substantially affected by significant daily increases in Delta salinity.

CCWD evaluated the daily water quality data provided by DWR, and found significant changes in water quality at CCWD's Delta intakes resulting from the SDIP. As explained in more detail below and in Attachment F, the daily data showed that the SDIP will have significant adverse impacts on Los Vaqueros Reservoir, which CCWD operates to ensure a reliable supply of high quality drinking water for hundreds of thousands of Californians.

In *Berkeley Keep Jets Over the Bay Com. v. Bd. of Port Comrs.*, 91 Cal. App. 4th 1344, 1372-83 (2001), an EIR for an airport expansion project used a significance standard for noise that was based on a model that averaged noise levels over a 24-hour period. The Court held that further analysis was required to evaluate individual noise events at the airport, such as a single aircraft flyover; individual noise events at night, for example, could cause significant sleep disturbance that was not adequately accounted for in the 24-hour average used in the EIR. The Court noted that "the probability of being repeatedly awakened by multiple single-event sounds can be calculated, given sufficient data," and it cited the "credible expert opinion calling for further evaluation of the impact of single-event noise" as well as "public concern over the noise created by increased nighttime flights." Id. at 1382. **CCWD1-20**

Here, the monthly and 16-year averages used by the Draft EIS/EIR similarly fail to account for the significant impacts caused by daily increases in salinity. Further, the daily data is clearly available, and the probability of significant daily impacts can be calculated. Indeed, CCWD's water quality experts analyzed the daily data and determined that the daily impacts are

significant. Moreover, the issue of water quality degradation in the Delta is clearly an issue of widespread public concern.

CCWD1-20

The Draft EIS/EIR needs to be revised, to account for daily impacts on water quality and other environmental resources.

Third, even though the Draft EIS/EIR purports to set out a monthly significance criterion (as described above), the actual significance determinations in the Draft EIS/EIR are based *only* on the 16-year average and *not* the monthly averages. As the EIS/EIR acknowledges, even significant monthly changes are not considered significant as long as the 16-year standard is not triggered. See Draft EIS/EIR at p. 5.3-22 ("Although there may be monthly significant changes, the overall impact on salinity . . . was considered less than significant if the long-term increase remains less than 5% of the baseline average salinity . . ."). In short, the EIS/EIR first claims it is using both a monthly average and a 16-year average to assess significance, but it then ignores the monthly average – even if significant monthly impacts are identified – when making the final significance determination.

CCWD1-21

This is misleading and it serves to mask even further the significant impacts on water quality that would be caused by the SDIP. For example, with respect to salinity impacts at Rock Slough resulting from Alternative 2A (Stage 2), the Draft EIS/EIR claims that the monthly significance standard is 100 µS/cm for electrical conductivity, which is a general measure of salinity. Figure 5.3-25 clearly shows exceedances of this standard, but the Draft EIS/EIR nevertheless finds the impacts to be less than significant, based on the average *long-term* values. See Draft EIS/EIR at pp. 5.3-38 to 5.3-39. With respect to salinity impacts at Old River, the Draft EIS/EIR similarly ignores what it admits are "relatively large monthly changes," based on the assertion that the *overall* (i.e., long-term) EC changes are considered to be less than significant. Draft EIS/EIR at p. 5.3-39.[1]

In sum, not only does the EIS/EIR fail to analyze the daily impacts on salinity, it also ignores monthly impacts on salinity, even where the monthly changes are admittedly significant, in determining whether the SDIP will have a significant impact on water quality.

Fourth, the assertion that an impact is not significant simply because it will increase baseline values by less than 5% is inappropriate. As explained more fully below and in Attachment F, the

CCWD1-22

[1] Moreover, the monthly significance standard of 100 µS/cm for Old River stated in the Draft EIS/EIR – even if it were actually used as a measure of significance for the salinity impacts of the SDIP – is inappropriate. This monthly standard is based on a water quality criterion of 1,000 µS/cm that does not apply at Old River. The Draft EIS/EIR provides that where there is no applicable numeric water quality criterion, the monthly standard is 10% of the measured or simulated mean. The simulated mean is 468 µS/cm under 2001 conditions and 469 µS/cm under 2020 conditions. Under the monthly methodology set forth in the Draft EIS/EIR, this translates into a monthly significance standard of 47 µS/cm, not 100 µS/cm. This means there are even more exceedances of the monthly standard at Old River than what is disclosed in the Draft EIS/EIR.

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SDIP will have significant impacts on CCWD's operations and its ability to provide a reliable supply of high quality drinking water to its customers.

The courts have rejected the notion that a project's impacts may be deemed insignificant solely because the environment is already degraded and the project makes a relatively small contribution to the overall problem. Thus, in *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 718 (1990), the EIR improperly concluded that increased ozone levels from the project would be insignificant because the project would emit only minor amounts of pollution compared to the total volume of pollutants already emitted in the area. The Court faulted the EIR for using "the magnitude of the current ozone problem in the air basin in order to trivialize the project's impacts," and for reasoning "the air is already bad, so even though emissions from the project will make it worse, the impact is insignificant." Id. at 718. According to the Court, the relevant question "is not the relative amount of [ozone] precursors emitted by the project when compared with preexisting conditions, but whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problem in th[e] air basin." Id. at 718.

The Court in *Los Angeles Unified School Dist. v. City of Los Angeles*, 58 Cal. App. 4th 1019, 1025-26 (1997), adopted a similar approach in invalidating an EIR for a development plan near several schools in Los Angeles. The Court stated the relevant issue "is not the relative amount of traffic noise resulting from the project when compared to existing conditions, but whether any additional amount of traffic noise should be considered significant in light of the serious nature of the traffic noise problem already existing around the schools." Id. at 1025. Because the EIR did not evaluate this issue, "the information in the EIR regarding noise levels around the schools is inadequate." Id. at 1026. See also *Communities for a Better Environment v. California Resources Agency*, 103 Cal. App. 4th 98, 120 (2002) ("the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant"). CCWD1-22

This same concept applies under NEPA. See *Border Power Plant Working Group v. Dept. of Energy*, 260 F. Supp. 997, 1023 n.21 ("when the baseline level of salinity is so high that it requires an extensive restoration effort, it is difficult to see how a new source of increased salinity, even a small one, can be insignificant cumulatively").

Thus, citing the mere percentage of the impact in terms of existing conditions, as the Draft EIS/EIR does when assessing the SDIP's impacts on salinity at CCWD's intakes, is not sufficient to demonstrate that the impact is insignificant. Indeed, it is precisely because Delta water quality has already been degraded that the CALFED Program was designed to ensure that water quality projects would proceed concurrently with conveyance and water supply projects, such as the SDIP, that further degrade water quality.

Fifth, the 16-year average used in the Draft EIS/EIR masks significant long-term seasonal increases in salinity. For example, the 16-year average EC increase for the months of July and CCWD1-23

August at Rock Slough under 2020 conditions are 32 and 64 µS/cm, respectively – well in excess of the Draft EIS/EIR's long-term criterion of 23 µS/cm (which is 5% of the baseline). The Draft EIS/EIR in Table 5.3.3 reports the overall 16-year average for 2020 conditions as 17 µS/cm, which is significantly less than the long-term increases for July and August. Plots of 16-year average impacts for each month for different SDIP alternatives are presented in Attachment G.

The Draft EIS/EIR measures significance based on 2001 conditions (see EIS/EIR at pp. 5.3-38 to 5.3-39). The maximum increase in the 16-year average EC for 2001 conditions is 34 µS/cm at occurs in January at Rock Slough. Again this is well in excess of the Draft EIS/EIR's long-term criterion of 23 µS/cm. CCWD1-23

In sum, the Draft EIS/EIR must be revised using appropriate significance criteria, and recirculated for additional public review and comment.

B. The SDIP's Water Quality Impacts Are Significant

The Draft EIS/EIR acknowledges that the SDIP will increase salinity at CCWD's intakes, but it finds that the impacts will be less than significant. This finding is erroneous and unsupported.

As explained more fully in Attachment F, CCWD conducted its own water quality analysis, which showed that the SDIP will have a significant negative effect on CCWD's operations. CCWD operates the Los Vaqueros Reservoir for water quality purposes, filling it with Delta source water when Delta salinity is low, and releasing high quality (i.e., low salinity) water from the reservoir to blend with Delta source water when Delta salinity is high. CCWD uses the reservoir to fulfill the objective adopted by its Board of Directors that water distributed within its service area contain no more than 65 milligrams per liter (mg/l) of chloride, which is used as a surrogate to measure salinity in Delta water. The reservoir cost CCWD ratepayers $450 million in 1995 dollars, and has a present worth of approximately $567 million.

Increased salinity at CCWD's intakes reduces the periods when the reservoir can be filled, reduces the periods when CCWD can serve its customers from its intakes without releasing blending water from the reservoir, increases the periods when CCWD must release blending water, and increases the amount of blending water that must be released. CCWD1-24

As described in Attachment F, CCWD's water quality analysis showed that implementation of Alternative 2A (Stage 2) would result in 17 additional days per year (as compared with baseline conditions used in the Draft EIS/EIR) that CCWD's delivery objective of 65 mg/L would not be met. This translates into an effective loss of about 12,000 acre-feet of the 100,000 acre-feet of storage available in Los Vaqueros reservoir. In other words, with the implementation of Alternative 2A (Stage 2), the 100,000 acre-feet reservoir will supply high quality drinking water to CCWD customers only as reliably as an 88,000 acre-feet reservoir under current conditions. This 12% loss in effective capacity in the Los Vaqueros Reservoir would dramatically impact CCWD's operations. Further, as explained above, comparing the SDIP alternatives against the

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true no-barriers base case results in the loss of an additional 1,000 to 2,000 acre-feet from Los Vaqueros' storage capacity. Clearly, the SDIP's water quality impacts on CCWD and its customers are significant. **CCWD1-24**

Even prior to Stage 2, the SDIP would have significant water quality impacts. CCWD's analysis showed that the implementation of permanent operable gates, with no changes in diversions, would result in a 4.5% loss of effective reservoir capacity.

The changes in salinity at CCWD's intakes also adversely affect Los Vaqueros Reservoir's function as an emergency water supply. The reduced opportunities for filling the reservoir resulting the SDIP, and the need for increased releases from the reservoir, will reduce the quantity of water available in the reservoir to be used during extended drought periods and emergencies. **CCWD1-25**

Increased salinity in CCWD's source water also corresponds to increased concentration of bromide ions in the water, which present a danger to public health. The source water must be disinfected to kill bacteria, viruses, and other pathogens before it can be used as drinking water. However, disinfectants not only kill pathogens but also react with other chemicals in the water, including bromide, forming new compounds known as disinfection by-products (DBPs). DBPs have been linked to increased cancer risk and other health effects. Bromide is a DBP precursor because its presence in source water leads to the formation of DBPs; an increase in DBP precursors results in a corresponding increase in DBPs in the drinking water supply. The SDIP's water quality impacts thus include the adverse public health effects of increased DBPs. **CCWD1-26**

All of these impacts must be fully assessed in a revised Draft EIS/EIR.

In addition, the water quality analysis in the EIS/EIR is deficient because it fails to provide an adequate analysis of the following:

- More aggressive use of the operable gates and use of low head pumps to further increase circulation flows (as requested by the Metropolitan Water District of Southern California and the South Delta Water Agency in their joint October 11, 2005, letter to Lester Snow, DWR); **CCWD1-27**
- The effects of water transfers made possible by the SDIP, which will significantly increase Delta exports under all of the operational scenarios; **CCWD1-28**
- The effects of increasing SWP pumping above 6,680 cfs *before* completion of the permanent gates, as contemplated under the Interim Operations scenario (see Draft EIS/EIR at pp. 2-2, 2-13 and 5.3-44); **CCWD1-29**
- The effects of operating the permanent gates during the winter (December through March); **CCWD1-30**

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- The effects of the permanent gates in redirecting poor quality San Joaquin drainage, which can contain toxic runoff from the San Joaquin Valley, toward CCWD's Delta intakes (see Draft EIS/EIR at 5.3-7); and — CCWD1-31

- The change in flow patterns and water quality resulting from dredging Delta channels relative to currently silted conditions. — CCWD1-32

For all of the reasons stated, the water quality analysis needs to be substantially revised.

V. The Analysis of Impacts on the Delta Smelt Is Inadequate

The analysis of the project's impacts on delta smelt also fails to comply with the requirements of NEPA and CEQA.

The Draft EIS/EIR recognizes that delta smelt have been in decline, including a serious decline to very low abundance in recent years. It further recognizes the need for immediate attention to this serious problem, and claims that the staged decision-making process for the SDIP will allow for the collection and evaluation of additional information before any decision is made on the project's operational component. However, the Draft EIS/EIR then raises the prospect (Interim Operations) that increased diversions would in fact be allowed in the near-term, before a decision on the operational component is made and even before the permanent gates are constructed. See, e.g., Draft EIS/EIR at p. 5.3-44. In light of the seriousness of the problem facing pelagic fish species in the Delta and the uncertainty over the causes for this problem, including the uncertainty over the degree to which the existing temporary barriers and existing level of exports impact the delta smelt, DWR and Reclamation should postpone *any* decision on the SDIP – including both whether to proceed with the permanent gates under Stage 1, and whether to proceed with increased SWP pumping under Stage 2 – until all of the relevant information concerning the recent dramatic decline in these species is collected and fully evaluated and the evaluation is subject to public review. — CCWD1-33

Instead of taking this reasonable and environmentally protective approach, the Draft EIS/EIR proposes starting construction of the permanent gates in several months and increasing SWP diversions before the decision-making process on whether to increase those diversions has even taken place. This approach raises serious concerns about the SDIP's impacts to pelagic fish species and casts serious doubts on the integrity of the staged decision-making process represented in the Draft EIS/EIR. — CCWD1-34

In addition to this fundamental problem, the Draft EIS/EIR does not provide an adequate analysis of the impacts of Stage 1 on the delta smelt. In particular, the potentially significant effects of blocking or disrupting fish passage, directing smelt toward the export pumps, and increased salinity resulting from barriers in the Delta, as well as the resulting impacts on the availability of food for smelt, have not been adequately disclosed, analyzed, or mitigated. Instead, the Draft EIS/EIR effectively dismisses the effects of the barriers, based on the assertion — CCWD1-35

that the impacts of installing permanent gates would be similar to the conditions with the existing temporary barriers. As explained above, DWR cannot use its interim test barriers to write off the impacts of installing permanent gates. This approach is particularly objectionable in light of the fact that vital information about the relationship between conditions in the Delta and the recent decline in pelagic fish species is currently being developed and has not yet been assessed. **CCWD1-35**

Furthermore, since 2001, the three agricultural temporary barriers have been removed almost two months later each year than they were before 2001, but the corresponding effects on pelagic species is not discussed in the Draft EIS/EIR. The Draft EIS/EIR needs to be revised to provide for a full and fair account of the impacts of the gates on the delta smelt. **CCWD1-36**

The Draft EIS/EIR also fails to provide an adequate analysis of the impacts on the Delta smelt of increasing Delta exports under Stage 2. For example, the Draft EIS/EIR determines that impacts on delta smelt migration habitat are considered less than significant, because net flow changes attributable to water supply operations are small relative to tidal flows. Draft EIS/EIR at p. 6.1-95 (Impact Fish-62). This determination is not supported. Delta smelt are poor swimmers and will be influenced by changes in Delta flow patterns caused by the SDIP. The Draft EIS/EIR acknowledges that net flow in Delta channels could be affected as a result of the SDIP, and that net channel flows have been identified as an important factor by the U.S. Fish & Wildlife Service because they move fish downstream. It also acknowledges that adequate flows, without flow disruptions, must be maintained during smelt migration. But the Draft EIS/EIR does not provide any analysis of these issues in terms of what the project's impact will be on smelt migration habitat conditions. Instead, it simply asserts that actual affects of net flow changes on smelt movement have not been demonstrated. This is hardly a justification to dismiss potential impacts as less-than-significant, especially since the Draft EIS/EIR recognizes the need to gather and assess critical information about the causes for the decline in the delta smelt before a fully informed decision on whether and how to increase SWP pumping can be made. The Draft EIS/EIR must be revised to contain a thorough analysis of the impact of export operations on flow patterns and flow disruptions, and how these factors may affect delta smelt migration. **CCWD1-37**

The analysis of entrainment impacts to the delta smelt resulting from increased Delta exports is also inadequate. The Draft EIS/EIR appropriately acknowledges that entrainment losses of Delta smelt as a result of SDIP operations are considered significant, but it concludes that mitigation will reduce this impact to a less-than-significant level. This conclusion is not supported. The Draft EIS/EIR relies on the EWA to provide mitigation for fish protection, but it fails to provide evidence of how the EWA will offset the impacts of the SDIP. **CCWD1-38**

Further, the Draft EIS/EIR fails to provide an adequate analysis of the potential impacts on food availability resulting from increased Delta exports. For example, the discussion fails to assess the effects of increased export operations on water clarity, and how these effects may reduce the ability of delta smelt to find food. It also fails to assess the effects on the residence time of water flowing through the Delta, and how these effects may reduce the transit time required for organic carbon supplies to be processed up the food chain to supply food for delta smelt. And it fails to **CCWD1-39**

assess the effects of increasing salinity in the western Delta, and how these effects may increase the range of the Asian clam, an invasive species that is capable of disrupting the availability of food for delta smelt. Temperature effects on Delta smelt have also not been considered. CCWD1-39

The analysis in the Draft EIS/EIR needs to be substantially revised, in order to provide a complete and accurate picture of the project's impacts on delta smelt and the mitigation that is needed to avoid or reduce impacts that are potentially significant.

VI. The Analysis Of Cumulative Impacts Is Inadequate

Under CEQA, a cumulative impact is an impact created by the combination of the project together with other projects causing related impacts. See CEQA Guidelines § 15130, 15355. The Guidelines make clear that cumulative impacts "can result from individually minor but collectively significant projects taking place over a period of time." See CEQA Guidelines § 15355. Thus, even if the project's impacts were less than significant (which they are not), this would not justify a finding that the project does not contribute to significant cumulative impacts. This is especially true, as explained above, when environmental conditions have already been substantially degraded.

Like CEQA, NEPA requires a thorough and accurate assessment of cumulative impacts. Under NEPA, a cumulative impact is the impact on the environment, which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. 40 C.F.R. § 1508.7. As under CEQA, the NEPA regulations make clear that cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. See 40 C.F.R. § 1508.7.

The analysis of cumulative impacts in the Draft EIS/EIR fails to comply with the requirements of CEQA and NEPA. For example, as described above, the cursory discussion of increased pumping to 10,300 cfs is wholly inadequate. The summary assertion that the impacts from this increase would be insignificant, based on the (erroneous) finding that the impacts of 8.500 cfs are insignificant, flies in the face of the requirement to analyze the *cumulative* effects of projects whose impacts, even if individually minor, could be collectively significant. A proper analysis of cumulative effects is especially important given the many individual actions that have collectively caused, and that continue to cause, substantial degradation of environmental conditions in the Delta. CCWD1-40

The EIS/EIR also fails to consider in its discussion of cumulative impacts reasonably foreseeable projects that will further contribute to degradation of water quality. One such project is the approved expansion of the Sacramento County Regional Wastewater Treatment Plant. The increased salinity at CCWD's Delta intakes resulting from this project alone will cause a virtual loss of 2,500 acre-feet of storage in CCWD's Los Vaqueros Reservoir, over and above the loss CCWD1-41

of 13,000-14,000 acre-feet of storage caused by the SDIP when compared against the no-barriers case. CCWD1-41

As with the project-specific analyses of the SDIP, the cumulative analysis needs to be revised.

VII. The SDIP Must Be Implemented in a Manner That Is Consistent With the CALFED Program's Requirement for Balanced Progress

The Draft EIS/EIR recognizes that the SDIP is a key water conveyance project of the CALFED Program. Draft EIS/EIR at p. 9-23. Contrary to the assertions of the EIS/EIR, however, the SDIP is not being implemented in a manner that is consistent with the Program.

The hallmark of the CALFED Program is balanced progress: The CALFED ROD emphasized that water quality, ecosystem, and water supply reliability projects would proceed concurrently and in a coordinated manner. The ROD also emphasized that problems in any one program area could not be solved effectively without addressing the problem in all areas at once. And the ROD stated a firm commitment to achieving continuous improvement in the quality of Delta waters. In fact, however, implementation of water quality projects has lagged far behind. Even CALFED itself admits that the Program is behind on water quality projects. As a result, the CALFED goals of concurrent implementation and continuous improvement of water quality have not been fulfilled. Thus, the SDIP is an integral part of the CALFED water supply program, but the manner and timing of the SDIP's implementation is inconsistent with the CALFED Program.

Federal law also emphasizes the requirement for balanced progress under the CALFED Program. The CALFED Bay-Delta Authorization Act (Public Law 108-361, HR 2828), which Congress enacted in October 2004, describes the specific activities of the CALFED Program, including the SDIP. This federal law mandates that these specific activities be carried out consistent with (1) the CALFED Record of Decision; and (2) the requirement that Program activities, including activities to protect drinking water, "will progress in a balanced manner."

Because funding and approval of water quality projects have lagged under the CALFED program, the timing and manner of the implementation of the SDIP is inconsistent with the CALFED ROD and its requirement for concurrent and balanced progress in all program areas. The implementation of the SDIP is also inconsistent with the specific requirement of federal law that CALFED activities must progress in a balanced manner.

VII. Conclusion

For the reasons set forth above, the Draft EIS/EIR for the SDIP must be substantially revised to address the issues raised in CCWD's comments.

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Attachment B

CCWD Operations and Facilities

The Contra Costa Water District (CCWD) serves water to approximately 500,000 people throughout north, central and eastern Contra Costa County. Formed in 1936 to provide water for irrigation and industry, CCWD is now one of the largest urban water districts in California and a leader in drinking-water treatment technology and source water protection. Its customers also include 10 major industries, and 12 smaller industries and businesses. The mission of the Contra Costa Water District is to strategically provide a reliable supply of high quality water at the lowest cost possible, in an environmentally responsible manner.

CCWD operates untreated water distribution facilities, water treatment plants, and treated water distribution facilities. CCWD provides treated water to Clayton, Clyde, Concord, Pacheco, Port Costa and parts of Martinez, Pleasant Hill and Walnut Creek. CCWD operates two water treatment facilities, the 75 Million Gallons per Day (MGD) Bollman Water Treatment Plant and the 40 MGD Randall-Bold Water Treatment Plant. The Bollman plant serves CCWD's treated water customers in Central County, and under special agreement, provides treated water to the Golden State Water Company in Bay Point. The Randall-Bold plant in Oakley, which came on line in July 1992, currently provides treated water to the Diablo Water District (DWD) and the Cities of Brentwood and Antioch. The Randall-Bold Water Treatment Plant is a direct/deep-bed filtration plant and utilizes both pre- and post-ozonation to provide a high quality drinking water to the customers in its service area. Additionally, the Multi-Purpose Pipeline, constructed in 2003, allows the District to serve new treated water customers in Central County from Randall-Bold. CCWD sells untreated water to the cities of Antioch, Martinez, and Pittsburg, and the Golden State Water Company in Bay Point, as well as industrial and irrigation customers.

The 48-mile Contra Costa Canal and the Los Vaqueros Project (completed in 1998) make up CCWD's principal water supply and delivery system. CCWD diverts unregulated flows and regulated flows from storage releases from Shasta, Folsom, and Clair Engle reservoirs into the Sacramento River as a contractor of the United States Bureau of Reclamation's (Reclamation) Central Valley Project (CVP). Under Water Service Contract I75r-3401A-LTR1 (renewed May 10, 2005) with Reclamation, CCWD can divert and re-divert up to 195,000 acre-feet annually (AFA) of water from its Rock Slough and Old River intakes. CCWD can also divert up to 26,780 AFA of water from its Mallard Slough intake under its own water rights (Water Rights License No.3167 and Permit No.19856). Some CCWD customers have additional sources of water. The City of Antioch has a water right permit to divert water from the lower San Joaquin River. Pittsburg, Brentwood, and DWD all have wells that can provide a portion of their needs.

CCWD has obtained water from the Delta since 1940. Delta water is subject to large variations in salinity and mineral concentrations. The Delta is also vulnerable to many anthropogenic and natural sources of water quality degradation. Degradation in water quality is objectionable to many CCWD customers, costly to all residential and industrial users, and a health risk for some

individuals. Federal drinking water regulations impose stringent limits on disinfection by-products in treated water, making it difficult to achieve the required pathogen inactivation while minimizing disinfection by-product formation. Bromide and Total Organic Carbon (TOC) are the significant constituents in Delta water that affect CCWD's requirement to meet disinfection by-product standards. Currently, CCWD's primary means of ensuring that disinfection by-product standards are met in the treated water are to ensure that bromide and TOC levels in the source water from the Delta are maintained below certain levels. Chlorides are monitored as an indicator of bromide levels, while TOC is monitored directly. CCWD adjusts operations daily to meet water quality goals in water delivered by CCWD to its customers. Bromide and TOC are not the only constituents of concern. Pathogens, nutrients, and other constituents contribute to the challenges of meeting regulations for treated water using Delta water as the source.

CCWD is committed to supplying its customers with the highest quality water practicable and providing all reasonable protection of the supply from any known or potential source of contamination. CCWD Resolution No. 88-45 states in part that:

> "CCWD is committed to reducing the concentration of sodium and chloride in the District's water, thereby reducing household and landscape irrigation concerns and industrial and manufacturing costs caused by the fluctuating sodium and chloride level of CCWD's Delta source...."

In May 1987, CCWD's Board of Directors adopted water quality objectives for water distributed within its service area. The acceptable concentration levels for sodium and chloride were established at 50 milligrams per liter (mg/l) and 65 mg/l, respectively. In 1988, the voter-constituents of CCWD approved the issuance of bonds to finance a $450 million water quality and emergency water supply project known as the Los Vaqueros Project. The primary purposes of the Los Vaqueros Project are to improve the quality of water supplied to CCWD customers and minimize seasonal quality changes, and to improve the reliability of the emergency water supply available to CCWD. The Los Vaqueros Project consists of a reservoir with 100,000 acre-feet of storage, a new point of diversion at Old River, south of the Highway 4 crossing, which operates in conjunction with the current Rock Slough diversion point, plus associated water conveyance and delivery facilities, pumping plants, and other facilities.

On June 2, 1994, the State Water Resources Control Board issued Decision 1629, which gives CCWD additional rights to divert and store water for beneficial uses. The State Board subsequently issued Water Rights Permits No. 20749 and 20750 for filling Los Vaqueros Reservoir from the new intake at Old River and diversion and storage of the water of Kellogg Creek. These rights are in addition to the contractual rights to divert and store water furnished through the CVP. Construction of the reservoir began in September 1994 and was completed in January 1998. Diversion from the Old River intake for delivery to CCWD's service area began in the summer of 1997. The first filling of Los Vaqueros Reservoir to 100,000 acre-feet was completed on January 28, 1999. Up to 95,850 AFA may be diverted for storage between

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November 1 of each year to June 30 of the succeeding year under Water Rights Permit No. 20749.

A key to successful performance of the Los Vaqueros Project is the District's ability to fill and continue to refill the reservoir from Old River with high quality water at times when it is available, typically late winter through early summer, and to use that water for blending when salinity at the District's Delta intakes exceeds the 65 mg/L chloride goal, generally late summer through early winter. Any increase in Delta salinity caused by new Bay-Delta projects will increase the demand on blending water from the reservoir and affect the availability of high quality water for refilling. The District and its 500,000 customers will be impacted through higher pumping costs to replace the extra blending water that is released and through the health effects, increased corrosion, and additional treatment costs of delivering higher salinity water. This also reduces the water supply available to CCWD in the reservoir in case of an emergency, thereby eroding the $450 million investment CCWD's customers have made in the Los Vaqueros Project.

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Attachment C

Additional Page-by-Page Comments on SDIP DEIR/EIS

Prior to Page ES-7 Impacts of Use of SDIP for Water Transfers are not Analyzed

The DEIS/EIR fails to analyze and disclose the water quality impacts of the additional exports that will be made possible by water transfers made possible by the SDIP. Figure ES-2 (before page ES-7, repeated as Figure 4-2) clearly shows water transfers will represent a significant use of the SDIP. The data in Figure ES-2 are summarized in the following table.

Increase in Total Delta Exports with the SDIP (2020 Conditions)

	SWP and CVP exports (TAF)	Water Transfers (TAF)	Total Increase in Exports (TAF)	% of Increase due to Water Transfers
Alternative A	185	105	290	36%
Alternative B	17	102	119	86%
Alternative C	112	99	211	47%

CCWD1-42

The increase in the amount of water transferred in future years compared to the amount of water transfers that are allowed under current conditions is also discussed on page 2-15. The water quality modeling for the DEIS/EIR does not include these water transfers.

CCWD requests that the EIS/EIR be revised to analyze, disclose and mitigate the water quality impacts of these increased water transfers resulting from the SDIP, including adverse impacts on salinity at CCWD's Delta intakes, and recirculate a revised draft EIS/EIR for additional public comment and review.

Page 1-17 Failure to Disclose the Impacts of the Interim Temporary Barriers Program

The DEIS/EIR states that "(t)he Temporary Barriers Program continues to be implemented on an annual basis as an interim solution to water levels and circulation until a permanent solution can be implemented."

CCWD1-43

The water quality impacts of this interim program have not been analyzed or disclosed. In 1995, DWR released an Initial Study for the Proposed Test Program for the Temporary Barriers Project. As stated on page 5 of that Initial Study, "the goal of the Temporary Barriers project during the initial five years testing period (1991-1995) was to test the effectiveness of barriers in improving water levels, water quality and water circulation in south Delta channels, protecting San Joaquin River salmon emigrating through the Delta, and gathering biological information concerning the barriers' potential effects on vegetation and fisheries." As also stated on page 5 of

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the Initial Study, the principle purpose of continuing the Temporary Barriers Project for an additional five years was to test the Grant Line Canal barrier and other aspects of the Project.

DWR also states in the 1995 Initial Study: "If analysis of the Temporary Barriers Project shows that the temporary barriers have significantly negative impacts that cannot be mitigated they will be removed, replaced, or modified."

The review of the water quality impacts of the temporary barriers during the first four years of monitoring in the 1995 Initial Study (page 60) was limited to a discussion of local impacts near the barriers and the increase in salinity upstream of the Grant Line Canal control station. No results or analysis were provided on the effects of temporary barriers in redirecting poorer quality San Joaquin River water into the Central Delta and to CCWD's drinking water intakes, or any associated degradation of water quality at CCWD's intakes. **CCWD1-43**

The Temporary Barriers Operating Schedule posted on DWR's Temporary Barriers website (see Attachment H) shows that the three agricultural barriers have remained in place for almost two months longer since 2001. The effect of this longer use of temporary barriers since 2001 on Delta smelt, for example by reducing the ability of the Delta smelt from moving freely within the southern Delta, is not discussed in the DEIS/EIR.

The DEIS/EIR fails to disclose the true base case -- i.e., Delta conditions without the interim temporary barriers. It therefore fails to disclose the environmental impacts of the interim test program, either in terms of the effects of the rock barriers or any increased pumping that was made possible through the use of these barriers. It also fails to analyze the impacts of continuing the interim temporary barriers project, even though the DEIS/EIR indicates that the state and federal permits for this project expire in 2007.

Further, by comparing the effects of the operable gates against the conditions with the temporary barriers, the DEIS/EIR understates the effect of flow barriers on CCWD and pelagic organisms in the Delta. CCWD requests that the EIS/EIR be revised to analyze, disclose and mitigate the SDIP relative to a no-barriers base case and recirculated as a draft for public comment and review.

Page 1-30 Effects on Water Quality in the South Delta

CCWD appreciates the statement in the DEIS/EIR that "DWR and Reclamation are committed to working with local agencies through the DIP and the CALFED program to ensure water quality is maintained." As acknowledged on page 1-30, "(w)ith the increase in development around the south Delta area combined with increased diversion up to 8,500 cfs, it is possible that water quality may be adversely affected." CCWD also appreciates the assistance that DWR provided in development of the Old River and Rock Slough Water Quality Improvements Project, which is expected to provide some mitigation for the water quality impacts at CCWD's intakes caused by the SDIP. **CCWD1-44**

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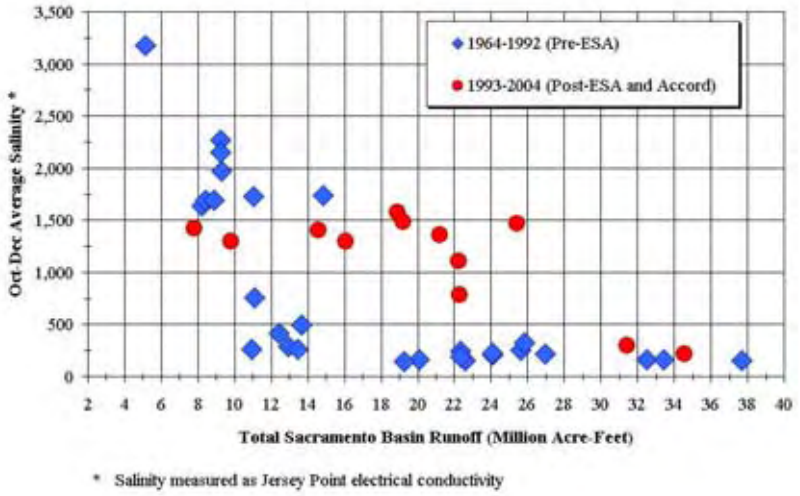
However, the Old River and Rock Slough Project is insufficient to mitigate the significant impacts of the SDIP. Without a commitment of funding water quality projects in the Delta Improvements Package (DIP) will not progress, and implementation of the SDIP without concurrent implementation of DIP water quality projects will result in water quality impacts to CCWD and imbalance in the CALFED Bay-Delta Program. **CCWD1-44**

Page 2-4 SDIP Decision Stages

As also discussed on page 1-29, "(r)ecent data indicate that there has been a decline in abundance of pelagic fish species. .... In 2005, DWR and Reclamation are redirecting resources to evaluate the potential causes of this decline including toxics, invasive species, and water project operations."

The DEIS/EIR fails to analyze the effect of temporary barriers (existing interim project) and operable gates (SDIP Stage 1) on redirecting toxics and other contaminants from the San Joaquin Valley into the central Delta and Suisun Bay, on blocking or otherwise impacting migration passage of delta smelt, on increasing Delta salinity in the summer and fall thereby improving habitat for the invasive Asian clam and reducing the food source for Delta smelt.

Western Delta Salinity in the Fall



* Salinity measured as Jersey Point electrical conductivity

CCWD1-45

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The figure above shows historical measurements of 3-month averaged salinity in the fall (October-December) in terms of Jersey Point EC. The data are plotted as a function of total Sacramento Basin Runoff to show the variation in western Delta salinity with the range of water year types (critical to dry to normal to wet years). The data since 1993 are much saltier than prior to 1993, especially within the normal range of water year types. Indeed, water quality in the fall at CCWD's intakes in normal water years after 1993 is now as bad as the water quality in the fall in dry water years before 1993. **CCWD1-45**

The DEIS/EIR is inadequate to support a decision on Stage 1 SDIP because it fails to analyze and disclose the existing effects of the temporary barriers and existing exports, and future effects of the operable gates on delta smelt and other pelagic organisms. CCWD requests that the DEIS/EIR be substantially revised to analyze, disclose and mitigate these impacts.

Page 2-13 Interim Operations

The DEIS/EIR on page 2-13 states that:

> "Alternative 2A also includes the implementation of Interim Operations, which would allow increased diversions prior to the full implementation of the operational component. Interim Operations would be used only between December 15 and March 15, as specified in the Corps Public Notice dated October 13, 1981. Interim Operations would include the greater of the maximum diversions of 6,680 cfs plus 1/3 the flow of the San Joaquin River when flows at Vernalis exceed 1,000 cfs (i.e., the existing limit); or maximum diversions of 8,500 cfs when (1) water quality standards (salinity at south Delta stations as defined by D-1641) are met and the DO in the San Joaquin River at Stockton is at or above the objective of 5 mg/l; (2) the south Delta water levels are at least 0.0 msl if needed for agricultural diversions; (3) there would be no unacceptable effects on special-status species; and (4) there would be no impact on EWA."

CCWD1-46

Interim Operations up to 8,500 cfs are also described on page 2-2. Moreover, on page 1-15, the DEIS/EIR states that the time required to design, fabricate and construct the gates (through 2009) "provides DWR and Reclamation time to sort out the cause of the decline in some pelagic fish in the Delta before substantial pumping due to 8,500 cfs permit changes takes place." (emphasis added) The use of the word "substantial" appears to indicate that DWR intends to operate beyond the current limits on export pumping prior to installation of the operable gates, i.e., much earlier than 2009.

In light of the dramatic decline in Delta smelt (discussed on page 1-29 of the DEIS/EIR) and concern over the effects of export pumping and flow barriers on delta smelt, CCWD does not understand why DWR is still proposing to increase exports to 8,500 cfs as an interim operation prior to completion of the Pelagic Organism Decline studies.

The DEIS/EIR is inadequate for use in decision making on Interim Operations because the water quality impacts of Interim Operations on CCWD have not been analyzed or disclosed in the

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DEIS/EIR. The Stage 1 analyses do not include any increases in exports and cannot be used to support interim operations.

CCWD also notes that the period when DWR and Reclamation intend to use Interim Operations (December 15 through March 15) is not during the less-sensitive time period for fish when increased exports are allowed under Operations Scenario B, but within the sensitive period for fish. This also means that none of the modeling for the three Operational Scenarios is representative of Interim Operations.

Summary of 3-Day Clifton Court Forebay Inflow Limits for Different SDIP Alternatives
(Limits apply when Delta smelt are present)

CCWD1-46

Period	Base Case	Interim Ops	Ops Scenario A	Ops Scenario B	Ops Scenario C
Oct 1 – Nov 30	6,680	6,680	**9,000**	**9,000**	**9,000**
Dec 1 – Dec 14	6,680	6,680	**9,000**	6,680	**9,000**
Dec 15 – Mar 15	6,680	**9,000**	**9,000**	6,680	**9,000**
Mar 16 – Jun 30	6,680	6,680	**9,000**	6,680	6,680
Jul 1 – Sep 30	6,680	6,680	**9,000**	**9,000**	**9,000**

CCWD requests that the DEIS/EIR be revised to include detailed analysis and disclosure of the environmental impacts of interim operations, in particular impacts on fish and water quality.

Page 2-17 3-Day Average Inflow to Clifton Court to be increased to 9,000 cfs

Although the increase in exports is generally referred to as an increase from 6,680 cfs to 8,500 cfs, the DEIS/EIR describes the actual increase in 3-day inflow to Clifton Court as an increase from 6,680 cfs to 9,000 cfs. Because the CALSIM operations model only uses a monthly time step, the additional requirement of a new 7-day average inflow of 8,500 cfs resulted in a monthly-average limit of 8,500 cfs. However, the DEIS/EIR is inadequate because it fails to disclose the possible daily water quality impacts on CCWD of an additional 500 cfs of export pumping as a 3-day average. CCWD requests that the DEIS/EIR be revised to include detailed analysis and disclosure of the environmental impacts of an additional 500 cfs of exports as a 3-day average.

CCWD1-47

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Page 2-30 Head of Old River Control Gate Operations

The DEIS/EIR states that "operation of the head of Old River fish control gate for fish protection and during other times of the year would lower the electrical conductivity (EC) of the western portion of these [southern Delta] channels." This reference is only to the southern Delta channels immediately west of the head of Old River barrier. The effect of the head of Old River barrier is also to redirect poor quality San Joaquin drainage, which contains sometime toxic runoff from the San Joaquin Valley, toward CCWD's Delta intakes even further to the west. CCWD1-48

Page 2-32 Winter Operations of Operable Gates

The DEIS/EIR states that:

> "For the period from December through March, the Middle River, Grant Line Canal, and Old River near the DMC gates may be operated only with permission from USFWS, NOAA Fisheries, and DFG if the following criteria are met:
>
> - USFWS, NOAA Fisheries, and DFG determine that such operation would not increase take of species in excess of the take authorized by the biological opinion (BO) for SDIP;
> - USFWS, NOAA Fisheries, and DFG determine that any impacts associated with gate operation during this period would not result in additional impacts on threatened and endangered species outside the scope of impacts analyzed by the said agencies in issuing BOs and a take permit for gate operations."

CCWD1-49

The effects of these proposed 4 months of additional gate closures on Delta water quality and CCWD's delivered water quality are not analyzed or disclosed in the DEIS/EIR and no mitigation is proposed for any potential adverse impacts.

CCWD requests that the DEIS/EIR be revised to including detailed analysis and disclosure of the water quality and other impacts of these additional gate closures.

Page 2-32 et seq. Impacts of dredging on Delta water quality

The DEIS/EIR is inadequate because it fails to analyze and disclose the change in flow patterns and water quality that will result from dredging south and central Delta channels. The SDIP water quality modeling for the basecase failed to include bathymetry representative of the accumulation of silt that has occurred in south and central Delta channels. This underestimates the effect of the proposed dredging on flow patterns and water quality in the central and south Delta. Water quality will be adversely impacted at CCWD's intakes if more water from Middle River is able to move eastward (away from CCWD's intakes) because of the proposed dredging in Middle River. CCWD1-50

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Chapter 5 – Physical Environment

Page 5.1-3 DEIS/EIR does not use most recent CALSIM II Basecase studies

The modeling of Central Valley operations using the CALSIM II model relies on the September 2002 Benchmark Studies for 2001 and 2020 Level of Development. However, updated CALSIM II studies were completed in 2004 as part of the biological assessment of the OCAP. The DEIS/EIR must be revised to include an explanation why the more recent studies, which included updated Trinity River flow requirements and new flow requirements, were not used in the SDIP modeling, and whether the water quality impacts on CCWD are even greater under the OCAP modeling assumptions. CCWD1-51

Page 5.1-5 CCWD's appropriative water rights

The DEIS/EIR notes that "(a) third substantial diverter of Delta water is CCWD, which currently diverts water from Rock Slough under Reclamation's CVP water rights and from a second intake constructed on Old River near the State Route (SR) 4 Bridge that serves as the pumping plant for Los Vaqueros Reservoir (Contra Costa Water District and Bureau of Reclamation 1993)." CCWD requests that the EIS/EIR specifically describe CCWD's own appropriative rights to divert water from the Delta at Mallard Slough and under CCWD's Los Vaqueros water rights (SWRCB Decision 1629). These water rights are senior to many of the future operations of the SDIP, including Joint Points of Diversion at Banks Pumping Plant. CCWD's water rights are discussed in more detail in Attachment B. CCWD1-52

Page 5.1-17 Impacts of additional water transfers made possible by the SDIP are not adequately analyzed or disclosed

The DEIS/EIR states that: "Although some additional water transfers could occur without the SDIP, the SDIP 8,500 cfs alternatives are expected to increase the ability of CVP and SWP contractors to transfer water across the Delta and convey the water in the California aqueduct to the place of beneficial use within the water district purchasing the water. A preliminary analysis of the water transfer capacity with the 8,500 cfs SDIP alternatives compared with the transfer capacity under existing conditions is included in this water supply evaluation. Figure 4-2 depicts the potential increase in transfers that could occur under each of the SDIP alternatives." Water transfers are also discussed in detail on page 5.3-62. CCWD1-53

The DEIS/EIR is inadequate because it fails to disclose the water quality impacts of these additional water transfers, made possible by the SDIP, on CCWD. The preliminary analysis of potential water transfers from July through September arising from "unused" Banks pumping capacity that appears in the section starting on page 5.1-50 is insufficient to determine the full water quality impacts on CCWD. The only summary of the water transfers that are likely to occur are presented in Figure 4-2 and Tables 5.1-14 (for 2001 level of development) and 5.1-15 (for 2020 level of development).

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On pages 5.3-61 and 5.3-62, the DEIS/EIR states that the water quality modeling performed for the SDIP alternatives did *not* include the potential future water transfers identified in section 5.1. The carriage water requirement is assumed to mitigate salinity impacts at Jersey Point and other south Delta locations, but no modeling evidence was presented to verify that almost doubling the amount of additional exports resulting from the SDIP will not significantly increase the already substantial water quality impacts on CCWD.

The DEIS/EIR on page 5.1-53 asserts that the SDIP is not responsible for mitigation of cumulative water transfer impacts from the 250 TAF/yr of water transfers that can occur in the near future without the SDIP. However, the SDIP is responsible for disclosing, analyzing and mitigating the impacts of water transfers that are made possible by the SDIP, and that would not occur without the SDIP.

The environmental impacts on the Delta of any reasonably foreseeable increase in export pumping resulting from the SDIP are the responsibility of this project and should be addressed in this DEIS/EIR. As the DEIS/EIR acknowledges on page 10-22, "the availability of excess pumping capacity, projected increases in future water demands, and recent water transfer history suggest this potential [for employing unused SWP pumping capacity during the July-September period for moving water transfers though the Delta] is a possibility that could increase cumulative water deliveries south of the Delta." **CCWD1-53**

The DEIS/EIR must be revised to include a full environmental analysis of the range of water transfers made possible by the SDIP and the environmental impacts of those water transfers, in particular, a detailed analysis of the impacts of the additional export pumping on Delta water quality at CCWD's intakes and on CCWD's delivered water quality.

Page 5.1-20 Water Year 1994 does not represent current operations post-Decision 1641

The DEIS/EIR uses Water Year 1994 to illustrate CVP and SWP delivery patterns. This water year was prior to the 1994 Bay-Delta Accord and SWRCB Decision 1629 and does not illustrate the way that the SWP and CVP are currently operated, nor does it illustrate the dramatic shift in export pumping from the spring to the fall that has occurred post-Accord. The DEIS/EIR must be revised to also show post-Accord delivery patterns. **CCWD1-54**

Page 5.1-33 SDIP causes significant water supply changes for CCWD

The DEIS/EIR states that: "The potential effects of increased salinity on CCWD diversions to Los Vaqueros reservoir, and on subsequent deliveries of water within the CCWD delivery target of 65 mg/l chloride, are fully described in Section 5.3, Water Quality. Because there are no substantial effects from CVP or SWP pumping on the salinity of CCWD diversions (see Section 5.3), it is assumed that no water supply changes in CCWD are caused by SDIP changes in SWP and CVP pumping." **CCWD1-55**

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This assumption is erroneous and is not supported by the data presented in Section 5.3 or the detailed results of the modeling studies provided by DWR to CCWD. Increases in Delta salinity due to the SDIP will cause CCWD to change its operations, including the use of the Los Vaqueros Reservoir, and will reduce the quality of CCWD's Delta water supply, and, as a result, the quantity of water available to CCWD under its own water rights. **CCWD1-55**

The DEIS/EIR must be revised to analyze and disclose the adverse impacts of the SDIP on CCWD's water quality and water supply and re-released for public comment and review.

Page 5.1-33 The use of temporary barriers and operable gates do increase SWP and CVP exports

The DEIS/EIR states: "The CALSIM results are not dependent on the SDIP Stage 1 physical/structural alternative selected for implementation." This assumption is incorrect. Without the operable gates, there could be periods when water levels and circulation in the southern Delta do not meet criteria required to protect the beneficial uses of water by the South Delta Water Agency and the SWP and CVP will need to make operational changes potentially including export reductions and increased flows on the San Joaquin River.

The same applies to the temporary barrier program. The use of temporary barriers as an interim test program by DWR and Reclamation may also have allowed additional exports relative to the no-barrier case. **CCWD1-56**

The DEIS/EIR must be revised to disclose the true base case (no barriers in the Delta) and to disclose, analyze, and mitigate the effects of the SDIP as measured against that base case. This must include a thorough and accurate assessment of water quality and water supply effects on CCWD caused by changes in Delta operations and increased exports that result from having barriers in the Delta. The revised DEIS/EIR must then be re-released for public review and comment.

Page 5.1-40 Impacts of Interim Operations are not properly analyzed

The DEIS/EIR discussion of operational changes under Interim Operations is only qualitative and is based on an 8,500 cfs year-round alternative (Alternative 2A) rather than a specific CALSIM II simulation that models the proposed December 15 through March 15 increase in export pumping under Interim Operations. This is faulty because the timing of increased exports would likely be different if the increased capacity were only available for a portion of the year. Furthermore, as described on page 2-13, DWR and Reclamation are considering implementing Interim Operations even before construction of the operable gates is completed, a scenario to which the Alternative 2A, Stage 1 (operable gates only) simulation results clearly do not apply. **CCWD1-57**

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The water quality impacts on CCWD of the proposed Interim Operations Scenario have again not been modeled, disclosed and no mitigation has been proposed for the expected adverse impacts on CCWD's water quality.

CCWD1-57

The DEIS/EIR must be revised to properly analyze, disclose, and mitigate the adverse impacts of the proposed Interim Operations on CCWD and Delta fisheries.

Page 5.1-50 Increased Exports due to Water Transfers in July-September will Impact CCWD

The DEIS/EIR states: "There is some water transfer capacity available under existing conditions, and additional water transfer capacity would be provided in some years with the SDIP export alternatives. Although CALSIM was not used to simulate water transfers, the CALSIM modeling of the 2001 and 2020 baselines (existing conditions and future no action) indicates that in many years there will be unused pumping capacity during the July–September period that may be available for moving additional water transfers through the Delta."

CCWD1-58

The daily SDIP water quality data provided to CCWD by DWR already shows that the greatest water quality impacts at CCWD's intakes occur in the July-September period (see Attachment G of this letter). For instance, the greatest long-term monthly average salinity impact at the Rock Slough Intake, simulated for the 2020 Alternative 2A Stage 2 case, is an 18 mg/L increase in chloride concentrations in August, compared to increases of 6-7 mg/L chlorides in December and January. The water transfers made possible by the SDIP will almost double Delta exports (page 5.1-17) and greatly increase these already significant water quality impacts on CCWD.

The DEIS/EIR must be revised to analyze, disclose, and mitigate the adverse impacts of the water transfers made possible by the SDIP on CCWD and Delta fisheries and re-released as a draft for public comment and review.

Page 5.2-19 DEIS/EIR fails to disclose water quality impacts relative to the actual no-barriers base case

The DEIS/EIR states on page 5.2-3: "A series of special DSM2 Delta tidal hydraulic simulations was made to help identify the specific effects from CVP and SWP export pumping in south Delta channels. These pumping effects were identified from simulations without any south Delta channel tidal gates." On page 5.2-19, these special simulations are revealed to be DSM2 runs for "typical summer tidal level and flow variations with a relatively low San Joaquin River inflow of 1,500 cfs and several different constant pumping cases for August 1997 measured Martinez tides and measured Sacramento River daily inflows."

CCWD1-59

If the intent of this special study was to estimate "the maximum potential effects" of export pumping in the absence of gates or barriers, the choice of the August 1997 period is puzzling; flows are by no means the lowest in the recent past or readily-available record (USGS flow meter

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data available on CDEC show that San Joaquin River flow at Vernalis was below 500 cfs in 1991 and 1992, and from 1985 to 1995 and again from 2000 to the present, flows of less than 1500 cfs were regularly recorded), and 1997 is not a year simulated in rest of the 16-year DSM2 simulations. This makes it difficult to place these results in context with the other modeling.

The DEIS/EIR fails to analyze, disclose and mitigate the environmental impacts of the SDIP as compared against the true base case.

CCWD1-59

The DEIS/EIR must be revised to include a more appropriate series of special DSM2 Delta water quality simulations of the specific daily water quality effects of CVP and SWP export pumping in south Delta channels without any south Delta channel flow barriers or operable gates. This would represent the true no-barriers base case and should be simulated for the entire 16-year DSM2 simulation period. The DEIS/EIR must be revised to analyze, disclose, and mitigate the full adverse impacts of the SDIP relative to the no-flow barrier base case.

Page 5.2-20 Increasing exports without increasing Delta outflow degrades water quality

The table on page 5.2-20 presents data on simulations where SWP and CVP exports are increased from zero to 14,900 cfs while maintaining a constant Delta outflow of 5,000 cfs without any temporary barriers of tidal gates. The intent was apparently to represent the general hydraulic differences caused by increasing CVP and SWP pumping with no flow barriers.

CCWD1-60

This dramatic increase in Delta exports would result in a significant degradation of Delta water quality if Delta exports were indeed held constant at 5,000 cfs and no additional flow was provided to offset the water quality impacts of additional exports (carriage water). The DEIS/EIR must be revised to analyze, disclose and mitigate the adverse water quality and other impacts on CCWD of increased Delta exports with the SDIP relative to this same no flow barrier base case.

Page 5.2-43 Impacts can occur despite natural tidal variability

The DEIS/EIR on page 5.2-43 defines the significance criteria for Delta hydraulics as follows: "A project alternative is considered to have a significant impact on tidal circulation flows if it would cause monthly average tidal flows to be reduced substantially below historical tidal flows. A substantial reduction in tidal flows will likely cause higher salinity from agricultural drainage in the south Delta channels. There is considerable natural variability in tidal conditions. A 10% threshold is selected to distinguish an impact from this natural variability. A reduction in simulated average tidal flows of more than 10% was assumed to be substantial."

CCWD1-61

The use in the DEIS/EIR of natural variability in tidal flows to mask the SDIP's impacts is inappropriate. Since the simulations of the base case and the project alternatives all use the *same* tidal boundary conditions, the difference between the modeling results for the base case and an

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alternative will reflect the impact of that alternative. The DEIS/EIR must be revised to include credible significance criteria. **CCWD1-61**

Page 5.2-46 Changes to Delta flow cause changes to Delta water quality

The DEIS/EIR states: "Figure 5.2-47 shows the 16-year period of monthly minimum, median, and maximum tidal level and monthly tidal flows in Old River at the SR 4 Bridge (near the Los Vaqueros intake) for the baseline and Alternative 2A Stage 1 conditions. The changes in monthly tidal level (minimum, median, and maximum) are just slightly detectable on the graph for some months. … The average tidal flows did not change because the export pumping at the CVP Tracy and the SWP Banks did not change. There are no significant tidal level or tidal flow effects in Old River at the SR 4 Bridge. No mitigation is required."

The analysis of impacts on flows is inadequate. The average monthly tidal flows do not appear to have changed judging by the vertical scale of Figure 5.2-47, but the maximum monthly flows are often lower by around 1,000 cfs. A decrease in northward flow in Old River will lead to increased seawater intrusion into that area of the Delta, creating water quality impacts on CCWD. It will also change the advection and longitudinal dispersion of agricultural discharges in Delta channels and can increase the concentration of contaminants from those sources at CCWD's intakes. Using monthly statistics and presenting the information on a limited vertical scale effectively mask impacts. **CCWD1-62**

The DEIS/EIR must be revised to clarify, analyze, disclose and mitigate the adverse water quality and other impacts on CCWD of decreased flows caused by the SDIP.

Page 5.2-51 Changes to Delta flow cause changes to Delta water quality

The DEIS/EIR states: "Figure 5.2-55 shows the 16-year period of monthly tidal level and monthly tidal flows in Old River at the SR 4 Bridge (near the Los Vaqueros intake) for the baseline and Alternative 2A Stage 2 conditions. The changes in monthly tidal level (minimum, median, and maximum) are slightly detectable on the graph and are similar to the Stage 1 changes. This suggests that the small changes in stage and flow are the result of the tidal gate operations, and not associated with pumping changes. The largest changes in the negative (floodtide) flows are associated with the increased SWP pumping conditions, which increase the upstream average tidal flow by about half of the export pumping change. There are no significant tidal level or tidal flow effects in Old River at the SR 4 Bridge. No mitigation is required." **CCWD1-63**

This analysis is flawed. Changes in flow under this scenario are easily detectable on the graph, and are larger than the changes due to tidal gate operations alone. By increasing southward flow, the increased export pumping allows more seawater intrusion into the Delta, degrading water quality at CCWD intakes. This comment applies to the analyses presented on page 5.2-56 for Alternative 2B (which neglects to quantify flow impacts in any form), page 5.2-59 for

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Alternative 2C (which entirely neglects to quantify flow or water level impacts), page 5.2-62 for Alternative 3B, and page 5.2-65 for Alternative 4B. The DEIS/EIR must be revised to analyze, disclose and mitigate the adverse water quality and other impacts on CCWD of increased upstream flows caused by each of the SDIP alternatives. **CCWD1-63**

Page 5.2-54 An analysis of future conditions is required

The DEIS/EIR neglects to specifically analyze the 2020 Conditions for water level and flow impacts, or related water quality impacts. A qualitative statement that impacts are "similar" to those simulated for 2001 conditions is not sufficient. The DEIS/EIR must be revised to also include analysis and discussion of simulations of water level and flow impacts under 2020 conditions. The DEIS/EIR must be revised to also analyze and disclose the adverse impacts of the SDIP at the 2020 level of development. **CCWD1-64**

Page 5.3-2 (and Page 10-12) Veale/Byron agricultural drainage management projects

The DEIS/EIR states: "The SDIP consists of several projects intended to improve water quality in the Delta, including two agricultural drainage management projects that are expected to reduce salinity at CCWD intakes. CCWD has agreed that these benefits will be considered along with the potential impacts from operating the tidal gates and pumping additional water at SWP Banks when judging the overall protection of water quality as described in the CALFED ROD."

On page 5.3-39, the DEIS/EIR states that: "CCWD in cooperation with CBDA Drinking Water Program is reducing the influence of treated wastewater and agricultural drainage from Byron Tract near the CCWD Old River intake. These improvements in salinity are not included in the DSM2 modeling results used to evaluate SDIP salinity impacts." **CCWD1-65**

The above citations refer to the Rock Slough Water Quality Project and Byron Tract Water Quality Project (also referred to respectively as the Veale Tract and Byron Tract Drainage Relocation Projects). Both projects were competed and in operation in January 2006. The reference to these projects on page 10-12 of the Cumulative Impacts chapter needs to be updated.

CCWD's analysis of the water quality benefits of these two projects shows that the benefits are insufficient to fully mitigate even the adverse impacts of the operable gates (SDIP Stage 1) on CCWD, let alone the impacts from implementing Stage 2. The Veale and Byron projects increase the effective size of the Los Vaqueros Reservoir by 2.5 TAF, whereas the SDIP Stage 1 impacts on CCWD reduce the effective size of the Los Vaqueros Reservoir by 4.5 TAF.

Page 5.3-16 DEIS/EIR must analyze daily water quality impacts, not just monthly

The DEIS/EIR states: "DSM2 simulates the 15-minute variations in EC that are caused by tidal flows in the Delta. It is expected that neither these short-term tidal variations nor short-term extreme conditions would be changed by the SDIP operations. Only the monthly (i.e., seasonal) **CCWD1-66**

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patterns of EC and other water quality variables are expected to be shifted slightly by the SDIP operations."

The daily water quality data provided to CCWD by DWR clearly show significant changes in water quality at CCWD's Delta intakes on a daily basis. The DEIS/EIR is inadequate because it only presents changes in water quality due to SDIP operations as monthly or 16-year averages, which masks the magnitude of the actual adverse daily impacts. CCWD delivers high quality drinking water to its customers on a daily basis and will be impacted by these dramatic daily increases in Delta salinity caused by the SDIP. **CCWD1-66**

The DEIS/EIR must be revised to analyze, disclose and mitigate the adverse daily water quality impacts on CCWD.

Page 5.3-20 et seq. SDIP Significance Criteria are inadequate for determining significance of impacts on CCWD

The significance criteria used in the DEIS/EIR are inappropriate for determining the significance of the adverse impacts of the SDIP on CCWD's daily operations. The DEIS/EIR must analyze the effect of daily variations on CCWD's operations, not just monthly and 16-year averages. Although violations of numerical water quality objectives and Bay-Delta standards would be significant, CCWD can also be significant impacted by daily degradation of Delta water quality when water quality is better than the established daily objectives. CCWD will also be significantly impacted by increases in salinity that are within the seasonal, tidal, and annual variations of water quality at CCWD's intakes.

As discussed on page 5.3-22, the DEIS/EIR uses two significance criteria for salinity, which is quantified as electrical conductivity (but can easily be converted to the equivalent chloride concentration). The first criterion is that the increase in long-term (16-year) average salinity not exceed 5% of the 16-year average EC for the No-Action base case, i.e., 50 µS/cm EC or about 14 mg/L chloride. The second criterion is that the increase in monthly salinity not exceed 10% of either the 16-year average EC for the No-Action base case, or 10% of the applicable Bay-Delta water quality objective in EC. In the case of CCWD's Rock Slough intake, this corresponds to 100 µS/cm EC or about 28 mg/L chloride. **CCWD1-67**

In summarizing the significant water quality impacts (page 5.3-2), the DEIS/EIR states: "There are no significant impacts on water quality as a result of implementation of the project alternatives. … There are occasional slight increases in salinity occur in the CCWD intakes and at SWP Banks, but these are less than 5% of the baseline values." It is disingenuous for the DEIS/EIR to treat the 3% increase in water supply due to the SDIP as significant but say a 3% increase in long-term averaged salinity is not significant.

The DEIS/EIR makes this incorrect assessment because the 16-year average EC of 17 µS/cm is less than 5% of 469 µS/cm (23 µS/cm). See Table 5.3-3. However, the 16-year average EC for

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the months of July and August are 38 and 57 µS/cm, respectively, values well in excess of this 5% significance criterion. The maximum monthly EC values for those two months are 242 and 416 µS/cm, respectively.

CCWD's assessment of the salinity data for the SDIP demonstrate that the monthly-averaged data for the project increase in comparison with the no project values by more than 5% approximately 30% of the time (the daily data exceed this criterion 29% of the time). Increases in salinity this large and this frequent will significantly impact CCWD's operations and the quality of water delivered to CCWD's customers on a daily basis. **CCWD1-67**

The DEIS/EIR is inadequate because it fails to disclose the significant water quality impacts on CCWD and other users of Delta water, including drinking water providers served by the SWP and CVP. The analysis of water quality impacts in the DEIS/EIR must be revised to include rational and realistic significant criteria and the EIS/EIR re-released as a draft for public review and comment.

Page 5.3-21 Basing significance criteria on natural variability masks the significant impacts of the SDIP

The DEIS/EIR states: "Natural variability is difficult to describe with a single value, but it is assumed that 10% of the specified numerical criterion (for variables with numerical criteria) or 10% of the mean value (for variables without numerical criteria) would be a reasonable representation of natural variability that would be expected to occur without causing a significant impact. Appendix D discusses the observed variability in historical Delta salinity (EC) measurements. Simulated monthly changes that are less than 10% of the numerical criterion or less than 10% of the measured or simulated mean value of the variable would not be considered significant water quality impacts because the simulated change would not be greater than natural variability." **CCWD1-68**

CCWD relies on the seasonal variation in chloride concentration in the Delta to meet its delivered water quality goal. CCWD fills Los Vaqueros Reservoir when water quality is good and uses stored water for blending when Delta water quality is poor. The SDIP will have significant water quality impacts on CCWD if it makes the good water quality worse and when it makes the poor water quality worse. Just as it would be unacceptable to use the natural variability of sunlight (night and day) to justify building a tall building that blocked sunlight light for a neighboring structure, it is not acceptable to base the SDIP water quality significance criteria on the seasonal variation in Delta water quality.

Page 5.3-22 There is no SWRCB M&I Chloride Objective at CCWD's Old River Intake

The DEIS/EIR states: "There are also applicable objectives of 250-mg/l Cl concentration at the four south Delta export locations (CCWD Rock Slough, CCWD Old River, SWP Banks, and **CCWD1-69**

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CVP Tracy). The CCWD at Rock Slough chloride is also subject to a 150-mg/l objective for about half of each calendar year (5 months in critical year, 8 months in wet years)."

The SWRCB M&I objectives apply do not apply at CCWD's Los Vaqueros Intakes on Old River near the State Route 4 crossing. The M&I objectives also apply at the intake to the North Bay Aqueduct and, in the case of the 150 mg/l chloride objective at the Antioch Pumping Plant intake. **CCWD1-69**

Page 5.3-25 Permanent Gates do not improve water quality throughout the south Delta

The operation of permanent gates in the south Delta cannot improve water quality at the locations specified in this section (Grant Line Canal at Tracy Boulevard Bridge, Middle River at Mowry Bridge, Old River at Tracy Boulevard Bridge) without decreasing water quality at other south Delta locations (CCWD's intakes). The DEIS/EIR must be revised to clearly acknowledge the degradation of water quality at other locations in the central and south Delta, including CCWD's Delta intakes. **CCWD1-70**

Page 5.3-31 Salinity changes at CCWD's Rock Slough and Old River intakes

The monthly EC change significance criterion of 100 µS/cm (10% of maximum EC) is too large to capture all the significant impacts on CCWD. An EC increase of 100 µS/cm is equivalent to an increase of 29 mg/L chloride. When compared to CCWD's delivered chloride goal of 65 mg/L developed as part of the Los Vaqueros Project, a 29 mg/L increase in chloride concentration at CCWD's intakes will have a substantial impact on CCWD operations. A SDIP significance criterion that allows an increase in Delta chlorides that is almost 50% of the quality of water CCWD needs to deliver to its customers to meet their public health and aesthetic goals is clearly unacceptable. **CCWD1-71**

The DEIS/EIR is inadequate because it fails to use significance criteria that protect the quality of water available to CCWD and other users of Delta water, including drinking water providers served by the SWP and CVP. The analysis of water quality impacts in the DEIS/EIR must be revised to include realistic significant criteria and the EIS/EIR re-released as a draft for public comment and review.

Page 5.3-39 Salinity changes caused by SDIP do impact CCWD beneficial uses of water

The DEIR/EIS states, "Although these relatively large monthly changes could occur under the Alternative 2A Stage 2 operations, the overall EC change is small enough to avoid any reductions in beneficial uses and the simulated changes at Old River at the SR 4 Bridge are considered to be less than significant." This statement is untrue. As discussed previously, the frequent and large daily changes in salinity caused by the SDIP would significantly reduce beneficial use of water by CCWD at CCWD's intakes, since CCWD needs to deliver high quality water to its customers on a daily basis. **CCWD1-72**

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Page 5.3-44 Impacts of proposed Interim Operations are not analyzed

As discussed previously, the statement in the DEIS/EIR that "(i)mplementation of Interim Operations would result in no significant water quality impacts" is incorrect and not supported by any modeling analysis of actual use of Interim Operations prior to construction of the tidal gates. The DEIS/EIR is inadequate because it fails to analyze, disclose and mitigate for the impacts of Interim Operations. The DEIS/EIR must be revised to include detailed analysis, disclosure and mitigation for Interim Operations. CCWD1-73

Section 6.1 Fisheries Impacts (including Appendix B)

General Comments

The DEIS/EIR is inadequate because it fails to adequately analyze and disclose all the impacts of the temporary barriers, the operable gates, and the increase in exports on Delta smelt and other pelagic organisms.

The potentially significant effect of blocking or disrupting fish passage, directing smelt toward the export pumps, and increased summer and fall salinity currently caused by the temporary barriers, and caused in the future by the operable gates, and subsequent impact on the food source for Delta smelt has not been analyzed. Instead the DEIS/EIR dismisses the impacts of the barriers and gates by stating:

> "Operation of the permanent gates would have less-than-significant impacts given that effects on net and tidal flow would be similar to conditions with the existing temporary barriers, and operability would increase flexibility to minimize existing effects." (Page 6.1-1)

In addition, in discussing mitigation measures for the SDIP alternatives, the DEIS/EIR states (Page 6.1.47) that the effect of the placement and operation of the temporary barriers on Middle River, Grant Line Canal and Old River on water quality has been monitored, and that no effects have been detected. However, there is no evidence included in the documentation to support this claim. The DEIS/EIR must be revised to include this data or specify exactly where this data can be found. Until this information is included, neither the current affect of the temporary barriers nor potential effect of the permanent barriers can be adequately assessed. CCWD1-74

The DEIS/EIR uses 'environmental correlates' and 'analytical tools' (Page 6.1-20) to link project actions to changes in environmental conditions. However, the DEIS/EIR oversimplifies the assessment of environmental conditions relevant to delta smelt by using X2 as the primary analytical tool (Table 6.1-3). It is well known (see, for example, p. 6.1-16 in the DEIS/EIR) that the relationship between X2 and delta smelt abundance is poor. Specifically, the DEIS/EIR has neglected to analyze other factors such as the geographic distribution and timing of temperature variations in the Delta, water clarity, as well as the natural annual migratory patterns exhibited

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by delta smelt between freshwater and more saline conditions. The DEIS/EIR must be revised to consider analytical tools other than X2 in the assessment of environmental correlates. CCWD1-74

Page 6.1-52 Impact of Maintenance Dredging in West Canal, Old River, Middle River and Grant Line Canal

The DEIS/EIR describes that maintenance dredging may be required in several south delta canals at unspecified intervals to maintain channel capacity and operation of the gates, with some dredging possibly occurring every year, and approximately 25% of the area initially dredged occurring every five years. The DEIS/EIR is deficient as it fails to consider the effect of increased conveyance and the associated changes to water flow and velocity patterns due to dredging. The potential of dredging to increase the velocity of water in the canals has not been discussed, nor has the effect of potentially straightening the canals. The DEIS/EIR fails to consider these aspects of the physical disturbance to the canals. Similarly, the change in the rate of conveyance and in the flow patterns on entrainment of fish due to increased pumping, and the effect of the disturbance of fish habitat at yearly and five-yearly intervals due to this dredging has been inadequately discussed. The DEIS/EIR must be revised to analyze and disclose the potential impacts of change in south Delta flow patterns due to regular dredging on increased entrainment at the pumps, and the potential for decrease of suitable habitat for delta smelt. CCWD1-75

Page 6.1-53 The full period of gate closures has not be analyzed

The DEIR/EIS states that the permanent barriers, particularly the head of Old River control gate may in fact be used for longer time periods than indicated in the DEIS/EIR. Further, on Page 6.1-119, the DEIS/EIR states: "Closure of the fish control gate for fish protection or DO improvement may be possible for more of the time than was simulated in the DSM2 modeling of the SDIP alternatives." CCWD1-76

The DEIS/EIR is flawed because the effects of the full potential barrier operations on Delta smelt survival have not been adequately assessed. Similarly, because closure of the head of Old River gate shifts San Joaquin River salinity toward CCWD intakes, the adverse impact of gate operations on CCWD water quality has not been fully assessed. The DEIS/EIR must be revised to analyze the full period of proposed gate closures and re-released for public review and comment.

Page 6.1-61 Construction-Related Loss of Spawning Habitat Area for Delta Smelt (Impact Fish-14)

The DEIS/EIR claims that the impacts of construction and maintenance dredging for gates in the south Delta on delta smelt spawning habitat are 'less than significant' because "entrainment of larvae in diversions, especially CVP and SWP pumping, would minimize the importance of spawning habitat in the south Delta." The DEIS/EIR appears to be suggesting that the export pumps have already depleted most of the larvae and juveniles in the south Delta, there is no need CCWD1-77

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to mitigate for any further loss. This is clearly inappropriate. The DEIS/EIR must consider mitigation for all the adverse impacts the project on delta smelt in the south Delta, including impacts from construction and maintenance of the operable gates. **CCWD1-77**

Page 6.1-94 Operations-Related Decline of Spawning Habitat Area for Delta Smelt (Impact Fish-60)

The Operations-Related Loss of Spawning Habitat Area is assessed only in terms of changes in X2 location. X2 was intended to be an estuarine habitat objective, and it is well known that the relationship between Delta smelt abundance and average X2 location is particularly weak (the weakest of all the species investigated). Delta smelt spawning location also relies in good part on water temperature and clarity (see the months January – July, Table 6.1-2, page 3 of 3). If temperature in the south Delta is good for delta smelt spawning while exports are high, the effect of operations related-loss on spawning habitat may be large. Since the possibility that operational changes may also disturb the temperature distribution and the clarity of the water in the Delta, the claim that operations would have less-than-significant impact on delta smelt spawning habitat area is not supported by the analysis presented in the DEIS/EIR. **CCWD1-78**

Page 6.1-94 Operations-Related Decline of Rearing Habitat Area for Delta Smelt (Impact Fish-61)

While the DEIS/EIR correctly notes that 'the USFWS has specified that loss of rearing habitat would adversely affect the abundance of larval and juvenile delta smelt' (Page 6.1-13), the DEIS/EIR neglects to consider that factors other than X2 should be used to assess this area. On Page 6.1-33, the DEIS/EIR states that delta smelt rearing habitat area is estimated using X2 and a nonlinear regression model to locate specific isohalines from which habitat area is calculated. Further, DEIS/EIR has neglected to consider that changes in the Delta flow and salinity fields due to increased export pumping may result in an ideal rearing habitat for delta smelt directly near the export pumps, where entrainment and predation may effectively render the area unsuitable for rearing. **CCWD1-79**

The DEIS/EIR must be revised to analyze and disclose the location and timing of environmentally suitable area for rearing Delta smelt in relation to the location of the export pumps. Until this is established, the percent change in rearing habitat under the alternative actions cannot be adequately assessed. The claim that the change in rearing habitat on delta smelt survival due to proposed project operations is less than significant has clearly not been demonstrated by the analysis presented in the DEIR/EIS

Page 6.1-95 Operations-Related Decline in Migration Habitat Conditions for Delta Smelt (Impact Fish-62)

The DEIS/EIR argues that the effects on Delta smelt migration habitat are less than significant because net flow changes attributable to water supply operations are small relative to tidal flows. **CCWD1-80**

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This argument is totally without foundation. The increase in exports proposed as part of the SDIP will move an additional 1800 cfs of water from north to south across the Delta and change the flow patterns. In Old and Middle Rivers near Bacon Island, the existing 6,680 cfs pumping at Banks, eliminates the south to north ebb flows entirely in many cases. Delta smelt are poor swimmers and will be influenced by these proposed changes in the Delta flow patterns. The DEIS/EIR at page 6.1-10 acknowledges that during adult smelt migration, which may extend from December to July, "(a)dequate flow and suitable water quality must be maintained, and channels should be protected from physical disturbance and flow disruption."

The DEIS/EIR acknowledges that "net channel flows have been identified as important because they move fish downstream (U.S. Fish and Wildlife Service 1996)" but then states that "actual effects of net flow changes on the movement of adult, larvae, and juvenile delta smelt have not been demonstrated." Failure to demonstrate the potential effects of net flow changes on Delta smelt migration is not grounds to dismiss the effects of the changes in flow caused by the temporary barriers, operable gates and increased exports on smelt abundance and survival. **CCWD1-80**

CCWD requests that the DEIS/EIR be substantially revised by analyzing the effect of current and potential export operations on flow patterns, and applying this analysis to determine the extent of flow disruption that may affect the migration patterns of delta smelt.

Page 6.1-95 Operations-Related Increases in SWP Pumping and Resulting Entrainment Losses of Delta Smelt (Impact Fish-63).

In this section, the DEIS/EIR notes that the SDIP may have some significant impacts on the survival of delta smelt. On Page B-2 of Appendix B, the DEIS/EIR states that entrainment losses occur either directly into the pumps, or by being indirectly drawn into vicinity of pumping facility where increased entrainment losses likely, and loss due to predation may be significant. As acknowledged on page 6.1-96, the significant impact of increased entrainment-related mortality of delta smelt is attributable primarily to a potential increase in SWP pumping during May and June. Entrainment of adult delta smelt in the winter may also be significant. Also (page 6.1-19), the CVP and SWP fish facilities indicate entrainment of adult delta smelt during spawning migration from December through April (California Department of Water Resources and Bureau of Reclamation 1994). Juveniles are entrained primarily from April through June. The implementation of Fish-MM3, Minimize Entrainment Losses of Delta Smelt Associated with Increased Pumping Operations, is proposed as a mitigation measure. **CCWD1-81**

The DEIS/EIR does not present any evidence regarding how or to what extent the proposed EWA actions will mitigate damage to fish abundance by SDIP operations, but this is the only type of mitigation used for entrainment losses of delta smelt due to operational changes (Page B-25, top). The assumption that the use of EWA water can mitigate for all the problems due to entrainment (Page 6.1-96) must be addressed in a revision of the DEIS/EIR. In addition, the DEIS/EIR does not discuss whether there may be potential trade-offs between salmon protection,

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and delta smelt protection using the three fish impact mitigate measures. The DEIS/EIR must be revised to properly analyze and disclose the potential impacts of the SDIP on delta smelt. CCWD1-81

Page 6.1-95 Operations-Related Reductions in Food Availability for Delta Smelt (Impact Fish-64)

The DEIS/EIR states (Page 6.1-95) that entrainment loss of delta smelt food organisms is not clearly separable from entrainment loss of delta smelt. It is also true that the entrainment loss of food is clearly not equivalent with entrainment losses of delta smelt, and other factors must be considered. For example, the effect of increased export operations on water clarity must be considered, as increased water clarity may reduce the ability of certain life stages of delta smelt to find food. The impact of operations on food availability for delta smelt also needs to be assessed in terms of residence time of water flowing through the Delta, as a sufficient transit time from source water to Delta is required for organic carbon supplies to be processed up the food chain to supply food for delta smelt. Clearly, export operations significantly affect this transit time. Page 6.1-75 of the DEIS/EIR states the position of X2 frequently moves upstream from September – November under the proposed operations. As a consequence, increased export operations will increase salinity in the Western Delta, potentially increasing the range of the Asian Clam, an invasive species that is capable of disrupting the availability of food for delta smelt. The claim that mitigation measure 3 (p.6.1-96) will correct food-availability problems is unjustified, as many of the factors discussed above have not been considered, and the claim itself based on an assumption that is without merit. CCWD1-82

Chapter 8: Compliance with Applicable Laws

Page 8-5 Operations and Fish Forum

The DEIS/EIR discusses the roles of the Water Operations Management Team (WOMT) and Data Assessment Team (DAT) in making decisions about CVP and SWP operations for the following week based on proposed project operations. The DEIS/EIR should also describe the role of the Operations and Fisheries Forum (OFF), which is comprised of a representative from each of the member agencies and interested parties. The Operations & Fisheries Forum member is responsible for being the contact person for his/her agency or interest group at any time when information regarding take of listed species, or other factors or urgent issues need to be addressed by the CALFED Operations Group. The Operations and Fisheries Forum may also be directed by the Operations Group to develop operational responses for issues of concern raised by member agencies. (see http://wwwoco.water.ca.gov/calfedops/desc.html) CCWD1-83

The same reference to the OFF should be made on page 2-29.

The DEIS/EIR also states that: "The WOMT does not normally include stakeholders, however they may be invited depending on the subject of the meeting." The DEIS/EIR should clarify that CCWD1-84

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while Bay-Delta stakeholders participate in CALFED Operations Group, DAT and OFF meetings, stakeholders have not yet been invited to attend WOMT meetings.

Page 8-22: Water Use Efficiency

The DEIS/EIR states, "The purpose of the SDIP is to improve the efficiency of conveying existing water supplies to CVP and SWP; thus, the proposed action would not result in the waste or unreasonable use of water."

The above statements are incorrect for a variety of reasons.

- The DEIS/EIR does not discuss whether any steps will be taken by the SDIP to ensure that additional exports to south-of-Delta users will be used efficiently. There is no evaluation, or reference to evaluations, of water conservation efforts, whether existing, planned, or potential. **CCWD1-85**
- Furthermore, the stated project objectives/purposes and needs of the SDIP, as written in the "Purposes and Needs" section of Chapter 1 of the DEIS/EIR, do not include any mention of improved efficiency of water supply conveyance. In fact, the only conveyance-related project objective listed on page 1-10 states that DWR and Reclamation seek to "increase water deliveries and delivery reliability to SWP and CVP water contractors south of the Delta and provide opportunities to convey water for fish and wildlife purposes by increasing the maximum permitted level of diversion through the existing intake gates at CCF to 8,500 cfs." The objective of increasing the pumping capacity at Banks will provide operational flexibility, which could improve conveyance efficiency, but it will also increase the amount of water exported from the Delta. It is incorrect to assert that the SDIP is a water-use efficiency project. **CCWD1-86**
- Lastly, the DEIS/EIR appears to imply that the existing water not currently being conveyed to the CVP and SWP export pumps is being wasted. By asserting that the operational flexibility provided to CVP and SWP export pumping by the SDIP will improve water use efficiency, the DEIS/EIR is assuming that current beneficial uses of un-exported water, such as for fish protection or in-Delta consumptive use, is an inefficient use of water. But there is no support for this assumption. **CCWD1-87**

The DEIS/EIR must be revised to properly address considerations of water use efficiency, and revisiting the project objectives/purposes and needs.

Pages 8-28 to 8-29: Water Rights

The section of the DEIS/EIR discussing water rights issued by California's State Water Resources Control Board is inadequate. There is no mention of CCWD's water rights, or any discussion of how the SDIP will impact CCWD's beneficial uses of Delta water. The DEIS/EIR states that "[t]o protect SDWA water rights, there is a need to maintain adequate water quality and levels for the consumptive use needs of south Delta agricultural users." The DEIS/EIR must **CCWD1-88**

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be revised to include discussion addressing a similar need to maintain water quality for the consumptive use needs of CCWD's municipal and industrial users. CCWD1-89

In addition, this section on water rights does not but should discuss the CVP and SWP water rights governing the export of water to south-of-Delta users. The discussion should include the amount of water and place of use authorized for the diversions under the existing water rights, as well as whether these rights are junior or senior to those of other water users who will be impacted by the SDIP. The DEIS/EIR must be revised to include a more complete discussion of water rights issues. CCWD1-90

Chapter 9: Growth-Inducing Impacts

Page 9-4 SDIP DEIS/EIR assumes growth is inevitable

By assuming that "[i]ncreases in the population in the solution area are projected over the next 30 years, regardless of CALFED actions", as assumed in the CALFED ROD, the DEIS/EIR assumes that growth is inevitable. But this assumption does not account for the possibility that growth may be prevented from occurring if sufficient water supplies are not available to serve that growth. The DEIS/EIR must be revised to analyze and disclose the effects of increased water supplies due to the SDIP on growth, and re-released for public review and comment. CCWD1-91

Page 9-11 DEIS/EIR must address future conditions as well

Table 9-4, which summarizes the increased water transfers made possible by the SDIP, only addresses 2001 conditions. As discussed in the Chapter 5 comments, the DEIS/EIR must include full analysis of 2020 conditions as well. The increased opportunities for water transfers provided by implementation of the SDIP represent a significant amount of the additional water that will be pumped under the 8500-cfs limit. In the future, the water transfers market will be more mature (not to mention the possibility of an expanded EWA), so it is reasonable to assume that the water transfer scenarios will be different under existing and future conditions. The DEIS/EIR must be revised to address this inadequacy in analysis. CCWD1-92

Page 9-19 Increased exports because of SDIP could support more intense agriculture

The DEIS/EIR states that "SWP delivers water mainly for M&I purposes but does deliver water to some agricultural water suppliers, principally KCWA. However, KCWA typically has enough water to meet its requirements, so additional supplies are not expected to result in the conversion of any new lands to agriculture." CCWD1-93

The DEIS/EIR is inadequate because it fails to provide any information regarding the current intensity of farming in areas served by the Banks Pumping Plant, the effect of increased water supply reliability and increase in water transfers made possible by the SDIP. The DEIS/EIR must be revised to address this inadequacy in analysis.

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Chapter 10: Cumulative Impacts

Page 10-8 Los Vaqueros Reservoir Expansion Project

The DEIS/EIR incorrectly states that the Los Vaqueros Reservoir Expansion Project "could increase water supplies available for export in those years when Los Vaqueros Reservoir otherwise would have spilled." Los Vaqueros Reservoir is an off-stream storage reservoir, which is filled by diversions from the Delta. The advisory measure, Measure N, passed by the ratepayers of Contra Costa Water District in March 2004 included a condition that expansion of the Los Vaqueros Reservoir should not result in exports of water to southern California. The operation of the expanded Los Vaqueros Reservoir will ensure that water supplies available for export will not increase. Information is available at www.lvstudies.com and by contacting CCWD's project manager, Marguerite Naillon (925-688-8018 or mnaillon@ccwater.com). CCWD1-94

Page 10-17 Delta Improvements Package

The DEIS/EIR fails to specifically name CCWD's Alternative Intake Project as part of the August 2004 CALFED Delta Improvements Package (DIP). The DIP-acknowledged actions to improve supply, fish, levees and water quality are often at odds, resulting in gridlock. The DIP established a set of actions to move CALFED forward in a balanced fashion, including key ecosystem, water quality and levee actions. CCWD has already completed the scoping phase of the Alternative Intake Project and is preparing a draft EIR/EIS for release in 2006. The Alternative Intake Project will relocate some of CCWD's municipal and industrial intake to a Delta location with better source water quality than is available at CCWD's existing Delta intakes. Information is available at www.ccwater-alternativeintake.com and by contacting the project manager, Samantha Salvia (925-688-8057 or ssalvia@ccwater.com) The DEIS/EIR must be revised to include discussion of the Alternative Intake Project. CCWD1-95

Page 10-21 Export pumping will increase even without the SDIP

The DEIS/EIR states "under 2020 no action conditions, combined SWP and CVP average annual export pumping would increase slightly compared to no action conditions under a 2001 level of development. This result indicates that, under future operational conditions without increased SDIP export pumping (e.g., increased CCF diversions), combined CVP and SWP export pumping would not be expected to change substantially compared to total average annual export pumping because the CVP and SWP are already capable of delivering full water supplies during above-normal and wet years (approximately 50% of the years simulated in CALSIM) and unable to deliver water supplies that meet demands during drier periods. This basic water supply condition would not change substantially at a 2020 level of demand because existing CVP and SWP storage reservoirs are unable to deliver additional water." CCWD1-96

This finding is inconsistent with Table 10-1, which lists several projects, including East Bay MUD's Freeport Project and the Delta-Mendota Canal-California Aqueduct Intertie, two

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reasonably foreseeable projects with certified final environmental documents that will increase CVP water exported from the Delta even without the SDIP. The DEIS/EIR must be revised to acknowledge that annual export pumping will increase compared to no action conditions under a 2001 level of development. **CCWD1-96**

Page 10-23 Increased upstream reservoir storage would decrease net Delta outflow in some months

The DEIS/EIR states that "Although it is speculative to identify the specific cumulative water supply and management effects that new or expanded storage projects would have on south Delta water supplies, it is reasonable to assume that current Delta protections for Delta outflow, D-1641 flow-related water quality requirements and current in-Delta uses would continue to be required. It is assumed that these types of storage projects could have positive effects on Delta water supply and resources by improving the amount and timing of flow to the Delta, providing flexibility in timing of storage and release of water for exports, and increasing the amount and timing of water used to protect sensitive aquatic species in upstream tributaries and Delta channels." **CCWD1-97**

It is incorrect to assume that the only effects of increased upstream storage on Delta water resources would be positive. It is possible to degrade Delta drinking water quality without violating existing Delta water quality standards, for example, when an upstream reservoir is refilling and reducing Delta inflow and outflow. The DEIS/EIR should include a balanced analysis of the cumulative effects of the SDIP and other water storage projects, including the negative impacts to Delta water quality.

Page 10-25 Delta Hydraulics are directly influenced by SDIP

The DEIS/EIR states that "The cumulative effects on tidal hydraulics are considered to be less than significant because the minimum tide elevations are similar to the minimum tide experienced at many south Delta channel locations that are not directly influenced by pumping (e.g., Old River at Bacon Island)." The hydraulics of the Delta system are parameterized by more than just tide elevations – flow and velocities and circulation patterns must also be considered. South Delta channel locations such as Old River at Bacon may not experience a change in minimum tide elevation, but decreases in water quality due to increased export pumping *are* observed at such locations. Any discussion on the hydrodynamics of the Delta in the DEIS/EIR must be revised to include analysis of how the SDIP will alter flow patterns, and the consequent impacts on Delta water quality. **CCWD1-98**

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Page 10-25 Water transfers will increase diversions to 8,500 cfs in drier years when impacts are greater

The DEIS/EIR states: "Water transfers will not result in diversion levels above 8,500 cfs, which is what was simulated in many months for the SDIP direct project effects." However, the DEIS/EIR fails to acknowledge that the water transfers can occur in drier years when Banks Pumping Plant exports would otherwise have been much less than 8,500 cfs because of low SWP and CVP water supplies. It is well known that impacts, e.g., on water levels, will be greater under dry low flow conditions than in wetter higher flow years. **CCWD1-99**

Page 10-27 Future water transfers made possible by the SDIP will further degrade Delta water quality

The DEIS/EIR states that: "Some future water transfers during the July–September period will be possible without the SDIP. As described above, the water quality effects from these additional exports are assumed to be compensated for by "carriage water" that will slightly increase Delta outflow during the transfer. No cumulative water quality impacts from any additional water transfers with SDIP are anticipated."

DWR and Reclamation only consider releasing carriage water when D-1641 M&I standards are controlling. If the Delta is in balance because of a minimum Delta outflow requirement, no increase in outflow will occur and water quality will degrade. Similarly, if excess Banks export capacity above 6,680 cfs is made available for a water transfer during surplus flow conditions, that transfer will reduce Delta outflow and degrade Delta water quality. **CCWD1-100**

The DEIS/EIR also neglects to mention that DWR and Reclamation are petitioning the State Water Resources Control Board to relax the existing southern Delta water quality standards (from 0.7 mS/cm EC to 1.0 mS/cm EC at interior Delta monitoring stations, per D-1641), and the existing D-1641 standard of 0.7 EC will revert back to 1.0 EC upon completion of the permanent operable gates in Stage 1 of the SDIP. Implementation of the SDIP, going from existing to future conditions, will likely result in net degradation of southern Delta water quality.

The DEIS/EIR must be revised to analyze, disclosure and provide mitigation for the cumulative impacts of the SDIP on Delta water quality and the quality of water delivered to CCWD's customers.

Page 10-27 Increased SWP Exports will increase discharges of treated wastewater

The DEIS/EIR incorrectly states that "Other potential future changes in inflow water quality, or increased discharges of treated wastewater, in the Delta are expected to be independent of the increased SWP Banks pumping anticipated with SDIP alternatives." As discussed earlier, the SDIP will increase water supply reliability, and therefore induce growth in south-of-Delta areas. The population of the Central Valley south of the Delta is projected to grow substantially in the **CCWD1-101**

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coming years; indeed, meeting the drinking water demands of this population is one of the underlying issues driving California water discussions. Since the SDIP will supply water to induce growth, the increased discharges of treated wastewater accompanying the growing urban populations cannot be said to be independent of the SDIP. The DEIS/EIR must be revised to analyze, disclosure and provide mitigation for the contribution of the SDIP to increased agricultural and urban water use in eth San Joaquin Valley and the corresponding degradation of San Joaquin River and Delta water quality. **CCWD1-101**

Page 10-28 Increasing SWP Exports to 10,300 cfs will further degrade CCWD's water quality

The DEIS/EIR incorrectly states that: "Operating SWP Banks facility at a future permitted pumping capacity of 10,300 cfs is not expected to significantly affect south Delta salinity, DOC and DO conditions because operations at this pumping capacity would be similar to operations described for SDIP at 8,500 cfs, and current Delta outflow and water quality criteria would be required at an increased level of SWP pumping."

As discussed earlier, the proposed increase in the export pumping rate from 6,680 cfs to 8,500 cfs results in significant impacts on the performance of CCWD's Los Vaqueros Project and the quality of the water delivered to CCWD's 500,000 customers. A further increase to 10,300 cfs will further degrade CCWD's delivered water quality and Delta water quality in general. **CCWD1-102**

The DEIS/EIR must be revised to quantify and disclose the actual impacts of increasing Banks export capacity to 10,300 cfs as part of the cumulative impacts of the SDIP.

Climate Change will impact the Delta

Recent studies indicate that climate change will significantly impact Delta water supply and quality. The DEIS/EIR makes no mention of climate change, or how the SDIP's anticipated benefits will be altered in the face of rising sea levels, levee failure, or the shift of winter precipitation in the Sierra from snow to rain. The DEIS/EIR must be revised to analyze and disclose the effect of SDIP on CCWD's water quality in the context of global climate change. **CCWD1-103**

Appendix A: Alternatives Development and Screening

Page A-13 Reduction of CVP and SWP Exports is not adequately considered

The reasons given for not evaluating a reduced exports alternative are unsupported. The DEIS/EIR states: "At the same time however, pumping reductions also may cause an adverse impact on water quality in some south Delta channels because tidal action and the pumps draw better quality water into the south Delta channels from the north and central portions of the Delta. ….Because reduction of CVP and SWP exports can worsen water quality in the south Delta and does not improve the ability of south Delta farmers to divert, this alternative does not **CCWD1-104**

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meet the local objective [to improve the reliability of the SDWA to divert water needed to meet consumptive use needs within its boundaries by maintaining adequate water quality and quantity] and is not retained for further evaluation for meeting this objective."

The DEIS/EIR provides no evidence to support eliminating this alternative on the erroneous ground of worsening water quality. Data presented in the DEIS/EIR clearly show that increasing the 3-day average Clifton Court Forebay inflow below 6,680 cfs (Stage 2) will degrade Delta water quality. It follows that reducing the 3-day average Clifton Court Forebay inflow below 6,680 cfs will generally reduce seawater intrusion and improve Delta water quality.

CCWD has observed that some water quality degradation has occurred historically at CCWD's Old River intake during the one-month period when the Vernalis Adaptive Management Program is implemented each year (typically April 15 through May 15). However, this occurs when Delta total exports are reduced to only 3,000 cfs or less. The DEIS/EIR must be revised to include analysis and disclosure of the effects of reducing Clifton Court inflow from 6,680 cfs to say 5,500 cfs on water quality in the south and central Delta. Without such data, the DEIS/EIR case for eliminating export reduction as an alternative is inadequate. Without quantifying or defining the relevant parameters and assumptions, it is impossible to ascertain the true water quality implications of reducing exports.

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Attachment D

Additional Comments on Fisheries Impacts of SDIP

The South Delta Improvement Project (SDIP) Draft EIS/EIR disproportionately focuses on the program's potential impacts on salmon and steelhead. While there are numerous reasons that would explain this focus, the delta smelt is the fish species most imperiled at the present time and is the only fish species identified in the DEIS/EIR that is expected to experience long-term degradation and loss of habitat. Our comments, which only addressed potential SDIP effects on delta smelt, reflect our concern about the inadequacy of the DEIS/EIR analysis of the potential impacts on delta smelt and the near-emergency situation of the species' present population levels.

The SDIP alternatives include construction and operation of gates in the south Delta, dredging, and water supply operations that affect fish and fish habitat in the Delta and rivers upstream of the Delta. As demonstrated in CCWD's extensive comments, the SDIP will significantly increase salinities at CCWD Delta intake locations. These salinity increases imply that salinity regimes in this region of the Delta and bayward will also significantly increase, which would be expected to alter the nature and extent of most of the estuarine habitat in the Delta. There is a wide range of scientific observations and theories concerning the complex relationships between the estuary's habitat water quality and the distribution and abundance of fish and invertebrate populations. These observations and theories, which are found in the literature and in proceedings of the Delta's scientists, are missing from the DEIS/EIR assessment of the SDIP's effect on estuarine salinity regimes and water quality. **CCWD1-105**

The DEIS/EIR assessment of the SDIP's effects on salinity regimes in the western Delta's are not presented in sufficient scope or detail to enable an adequate assessment of whether the project will significantly affect the estuary's habitat quantity or quality, particularly for rearing and feeding opportunities for delta smelt. Although the exact nature of the relationship between the recovery of the delta smelt's estuarine habitat and the population level success of delta smelt is variable and ambiguous at the present time, adult abundance is always low when X2 (2 psu) is located in the upper estuary in the lower Sacramento and San Joaquin rivers. Findings from the scientific literature relate the abundance and distribution of the overbite clam *Corbula amurensis* to patterns of salinity throughout the Bay and Delta, as the landward invasion of the clam appears to follow increasing salinity regimes in the upper estuary. Following the clam's introduction in 1987–1988, a sharp decline occurred in the copepod *Eurytemora affinis*. A number of reports indicate a strong relationship the decline of *Eurytemora* and the abundance of delta smelt. Brackish water organisms, including *C. amurensis*, have increased in abundance at the Sacramento-San Joaquin river confluence to 1987–1992 levels. It is presumed this **CCWD1-106**

resurgence could depress lower trophic level productivity in Suisun Bay and the western Delta (Kimmerer and Orsi 1996; Kimmerer submitted).[2]

It is reasonable that decline in food supplies would affect delta smelt and should be assessed along with the effects of higher salinities on the quality and quantity of delta smelt rearing habitat. The impact of increased brackish conditions (salinity) on the delta smelt trophic conditions needs to be a significant element of SDIP DEIS/EIR assessment.

The DEIS/EIR is not only inadequate in its assessment of the potential for proposed SDIP salinity increases to alter the quality of the western Delta's trophic structure and food availability salinity regimes, but the quantity of delta smelt habitat could also be significantly reduced. Unger (1994) showed that the overall surface area of habitat bounded by 0.3 and 1.8 psu was maximized with X2 positioned in Suisun Bay. Although the DEIS/EIR agrees with this range salinity range for rearing habitat, it omits the importance of the positioning of this range to maximize the amount of habitat. It is implied, but not made explicit for the reader, that Figure 6.1-18 incorporates the loss of Delta smelt estuarine rearing habitat area for Alternative 2A as a function of the position of X2 to maximize rearing habitat. These findings shown in this figure and its accompanying data table in Appendix K are repeatedly referenced in the DEIS/EIR, but the analytical methods are not described in sufficient detail to assess the basis of the underlying assumptions and analytical relationships of the DEIS/EIR simulations. Delta smelt gut fullness and individual condition were considerably higher in Suisun Cut than in the ship canal (Hobbs 2004). Bennett (2005) found that the low-salinity zone and dense patches of zooplankton support a hypothesis that the low-salinity and shallow-water areas of Suisun Bay constitute vital nursery habitat for delta smelt during moderate to high outflow conditions (Bennett (2005) cites Herbold and others 1992.)[3] **CCWD1-106**

The SDIP DEIS/EIR needs to provide a detailed analysis of monthly X2 values, that enable an analysis of the program's proposed operational effects on the coincidence of changes in the position of X2 and spawning and rearing habitat, and present simulation results in the context of mapped known or assumed habitat for Delta smelt. In addition, a thorough assessment is needed of the significance of the SDIP-altered position of X2 to reduce the maximum surface area

[4] Interagency Ecological Program Synthesis of 2005 Work to Evaluate the Pelagic Organism Decline (POD) in the Upper San Francisco Estuary, Prepared by: Chuck Armor (DFG), Randall Baxter (DFG), Bill Bennett* (UC Davis), Rich Breuer (DWR), Mike Chotkowski (USBR), Pat Coulston (DFG), Debra Denton* (EPA), Bruce Herbold (EPA), Wim Kimmerer* (SFSU), Karen Larsen* (CVWRCB), Matt Nobriga (DWR), Kenny Rose* (LSU), Ted Sommer (DWR), and Mark Stacey* (UCB) (* *outside experts who participated in the development of this report, but did not review this draft*)

[5] Critical Assessment of the Delta Smelt Population in the San Francisco Estuary, California. 2005. William A. Bennett, John Muir Institute of the Environment, Bodega Marine Laboratory, University of California, Davis

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bounded by the 0.3 and 1.8 psu, or in other terms, the degree and extent to which SDIP operations move X2 landward from Suisun Bay.

The omission of this information from the DEIS/EIR makes it nearly impossible to assess the significant effects of the SDIP, and particularly Stage 2, on delta smelt, a threatened species. The effect of SDIP operation on X2 may also adversely affect the position of delta smelt with respect to mortality at the Contra Costa and Pittsburg power plants' cooling water intake structures. Neither SDIP's effect on X2 and the optimization of the position of delta smelt habitat in Suisun Bay, nor the minimization of the position of X2 and delta smelt habitat in front of the power plant intakes can be assessed without detailed information about SDIP effects on the monthly position of X2 throughout low, moderate, and high outflow conditions. The limited information in the DEIS/EIR is presented as long-term averages (e.g., 16-year averages) that cannot be used to assess short-term water quality changes on fish and food populations on a geographic basis. The DEIS/EIR assessment must include geographic information on SDIP effects on the location salinity fields, X2, and habitat important to delta smelt spawning and rearing. **CCWD1-106**

In sum, the South Delta Improvement Project (SDIP) DEIS/EIR disproportionately focuses on the program's potential fisheries protection and mitigation efforts on salmon and steelhead. After reading the DEIS/EIR, the reader reaches the conclusion that while the SDIP may improve habitat for salmon and steelhead during critical conditions, it will at the same time harmfully reduce the amount of Delta smelt habitat under those same conditions. In other words the SDIP clearly indicates water management practices that are good for Delta smelt (both spring and fall populations), including fall river flow and temperature for salmonids, are also good for salmon and steelhead populations, but the reverse is not true. The DEIS/EIR has not adequately addressed the importance of the reduction in Delta smelt habitat from the SDIP, especially fall rearing habitat, and consequently has not identified mitigation for these overlooked impacts.

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Related Page-by-Page Comments:

Page	SDIP DEIS/EIR	Comment	
6.1-9	Estuarine rearing habitat for juvenile and adult delta smelt is typically found in the waters of the lower Delta and Suisun Bay where salinity is between 2 and 7 ppt.	The detailed analysis of the location, area and rearing characteristics of this habitat must be included in the DEIS/EIR to enable assessment of impacts to delta smelt caused by SDIP alteration of salinity regimes that define the Stage 2 quantity and quality delta smelt habitat in comparison to maximum rearing habitat defined by Unger's (1994) analyses of X2 and maximum delta smelt habitat.	CCWD1-107
6.1-10	**Rearing habitat**—an area extending eastward from Carquinez Strait, including Suisun Bay, Grizzly Bay, Honker Bay, Montezuma Slough and its tributary sloughs, up the Sacramento River to its confluence with Threemile Slough, and south along the San Joaquin River, including Big Break. Suitable water quality must be available, and X2 must be maintained according to historical salinity conditions. Rearing habitat protection may be required from the beginning of February through the summer.	The DEIS/EIR does not contain adequate descriptions or analyses of the potential impact of the SDIP on delta smelt habitat or X2 to assess the significance of project's impacts. The seasonal timing of salinity regimes and locations are important elements in the definition of the delta smelt's critical habitat. In order to adequately assess SDIP impacts on delta smelt critical habitat the DEIS/EIR must provide fine-scale information on the location, area and movement of X2 and in comparison to maximum habitat appropriate to each life stage of delta smelt. In addition to rearing habitat, these analyses must include analyses of the location of spawning habitat (an area hydraulically conducive to their ability to maintain position and metabolic efficiency), suitable water quality and substrates for egg attachment (firm substrate, woody material, and vegetation).	CCWD1-108

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Page	SDIP DEIS/EIR	Comment	
6.1-11	All of the above critical habitat elements are addressed in the Environmental Consequences section. The environmental correlates used in this DEIS/EIR reflect the primary constituent elements of critical habitat above.	The qualitative and hypothetical discussions of SDIP impacts on delta smelt presented in the Environmental Consequences section are extremely brief, generally only a sentence in length. These tabulated short one-liners are accompanied by an only slightly longer summary discussion of all the critical habitat elements at once, which omits the results of quantitative analyses. An assessment of SDIP impacts on X2 determined from monthly time-step results is compared over a lengthy history of water years most of which would no longer be relevant to future SDIP operations. The Delta smelt's single year life history makes their population uniquely vulnerable to short-term changes in the quantity and quality of their spawning and rearing habitat and available forage. As suggested below, the DEIS/EIR should include a sensitivity analysis of using data from hydrologic periods other than the averaging of the 1922 to 1994 record such as in Figures 6.1-17 and 6.1-18, which tends to masks the effects of marginal watershed, low water and droughts, in even the 90th percentile results. The simulation methods and procedures that were use to produce the data and graphics presentation should be included in a separate appendix. For example how was Unger's (1994) data integrated in the DEIS/EIR simulations of Delta smelt rearing habitat? The appendix should also include specific geographical analyses linking X2 to actual mapped areas of Delta smelt rearing habitat. This information is particularly important for assessing the DEIS/EIR in light of uncertainties among scientists about where the maximum Delta smelt rearing habitat is located, as discussed further below.	CCWD1-109

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Table 6.1-3, Continued p. 5 of 6	Delta Channel Flows—South Delta DWRDSM2 Qualitative assessment based on gate elevation and tidal flow volume Fall-run Chinook salmon: juvenile Delta Smelt: adult and larvae	A qualitative assessment is inadequate to determine evaluate potential effects on the maximum quantity, quality and location of delta smelt habitat. The DEIS/EIR must be revised to include an analysis of the potential quantitative effects of SDIP by combining DWR DSM2 and CALSIM results.	CCWD1-110
6.1-27	**Delta Smelt** – The assessment of changes Delta inflow on delta smelt spawning habitat is based on the hypotheses that reduction in spawning habitat will result in reduced larval production. Implementation of the SDIP is unlikely to substantially affect environmental conditions (i.e., fresh water) that maintain the existing habitat area in the Delta. The extent of salinity intrusion into the Delta, as represented by the change in location of X2, will be evaluated to confirm minimal effect on spawning habitat area. For Alternative 1 (the No Action Alternative) and the action alternatives, the habitat areas computed for each month were divided by the maximum habitat area for Alternative 1, 1922–1994 simulation. The resulting proportional habitat area for a month under Alternative 1 was subtracted from the proportional habitat area for an action alternative for the same month. The difference is the percent change in estuarine rearing habitat area. The percent change in estuarine rearing habitat area is assumed to represent the expected change in survival.	The incomplete and inadequate level of assessment of SDIP changes in Delta inflow on delta smelt is captured in the DEIS/EIR wording "…unlikely to substantially…," without discussion or explanation. This is unacceptable for an imperiled species. An analysis, such as the one described above, must be completed for an adequate assessment of the "…extent of salinity intrusion into the Delta, as represented by the change in location of X2…," and the effect on the maximum size of spawning habitat area. A detail description and geographic definition of maximum rearing habitat needs to be included in the DEIS/EIR. The analytical methods and procedures of these analyses need to be provided for a complete assessment of the DEIS/EIR results and conclusions. Additional information also needs to be provided for Alternative 2 assessments of impacts on Delta smelt rearing habitat. Descriptions of the DEIS/EIR analytical methods and procedures should include example cases, ideally with examples of results of simulated short-term operational changes on maximum habitat reduction and variance of monthly reductions (and specific) of the maximum Delta smelt rearing habitat between years over the last decade. The minimum time step for these analyses would be weekly simulations and variance estimates of fluctuation in X2 and the maximum rearing habitat surface area. The DEIS/EIR should also include a rationale and explanation of what value was used to determine the amount of reduction in maximum habitat area that would not be considered significant to the protection and recovery of delta smelt.	CCWD1-111

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Page	SDIP DEIS/EIR	Comment	
6.1-94	**Impact Fish-60: Operations-Related Loss of Spawning Habitat Area for Delta Smelt.** Delta smelt spawn in the Delta, upstream of the 2 ppt isohaline (X2). As indicated in the methods description, existing information does not indicate that spawning habitat is limiting population abundance and production (U.S. Fish and Wildlife Service 1996). The extent of salinity intrusion into the Delta, as represented by the change in location of X2, provides an index of potential effects of water supply operations on spawning habitat availability throughout the Delta. Delta smelt spawn primarily from January through May. Water supply operations under Alternative 2A would affect the location of X2 (Figure 6.1-8). The location of X2 during the spawning period for delta smelt is nearly the same under both Alternative 1 and 2A. The change in location of X2 during the spawning period is less than 1 kilometer in most months, indicating relatively minor salinity intrusion into Delta spawning areas. Operations under Alternative 2A would have a less than significant impact on spawning habitat in the Delta.	The analysis provides a probability statement of X2 changes based on the underlying probabilities of watershed conditions and climate since 1922, including some with very little likelihood to occur the future. The DEIS/EIR should include a sensitivity analysis of the effect of varying the period used in the analysis. The results should be presented for ten-year periods over the past five decades. Assumptions about the past water record to forecast the future water conditions and SDIP changes in X2 are deeply imbedded Figure 6.1-8. Conclusions drawn from such a simulation results must be thoroughly tested for representativeness and contemporary relevance. The single year life history strategy of the Delta smelt places it in great jeopardy from to year-to-year variations in water conditions and climate. The delta X2 analysis in Figure 6.1-8 does not provide the underlying variance of the no-action alternative (Alternative 1) and the potential cumulative fluctuations X2. An appropriately designed sensitivity analysis to test the DEIS/EIR simulation would make it possible to assess the short term incremental risk of SDIP losses of delta smelt spawning habitat. In the analysis the position of X2 should also be equated to the quality and quantity of the theoretical spawning habitat (In his assessment of the status of Delta smelt, Bennett 2005 found that spawning areas and microhabitats among other actors are too poorly known for developing population models and, it would have to follow, any simulation of the effects of SDIP). The SDIP analyses focus on the probability of various water conditions rather than biologically defined measures of effects on Delta smelt spawning areas. The impact analysis incorrectly focuses on the change in the distance of X2 from the Golden Gate, rather the resulting change in Delta smelt habitat volume or quality.	CCWD1-112

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Page	SDIP DEIS/EIR	Comment
6.1-94	**Impact Fish-61: Operations-Related Loss of Rearing Habitat Area for Delta Smelt.** Delta smelt larvae, juveniles, and adults rear in the Delta and Suisun Bay where changes in water supply operations potentially affect estuarine rearing habitat area. The location of the preferred salinity range for delta smelt rearing is assumed to determine estuarine rearing habitat area in the Delta and Suisun Bay. The range of salinity preferred by delta smelt (0.3 ppt to 1.8 ppt) was used to calculate the estuarine rearing habitat area for each month under Alternative 1 (proportion of the maximum area available for any month of the 1922–1994 simulation) (Figure 6.1-17). High Delta outflows move X2 downstream and increase the available rearing habitat for Delta smelt. The proportion of the maximum rearing habitat area available ranged from about 25% to 100% depending on the month and simulated hydrologic conditions. The primary months that estuarine rearing habitat is important to survival of a year class are not precisely known, but it appears to be most important from March through July (Unger 1994). During most simulated years, the proportion of maximum habitat area available exceeded 60% during the important months for rearing in most years. Habitat availability is generally lowest from September through December (Figure 6.1-17).	The impact assessment inappropriately focuses on changes in the position of X2 and does not consider the geographic variation in the quantity and quality of Delta smelt habitat. It is implied, but not made explicit for the reader, that Figure 6.1-18 incorporates the loss of Delta smelt estuarine rearing habitat area in Alternative 1 and presents it as a change from the existing condition, which masks the potential for further reduction in rearing habitat on top the existing habitat reductions of up to 75 percent. If the additional habitat reductions from Alternative 2 are the potential straws that would break the camel's back, then we need to see the camel and straws in the same figure. The findings shown in the two figures and their accompanying data tables in Appendix K are repeatedly referenced in the DEIS/EIR to demonstrate the absence of a significant impact. However, without a clear understanding of the analytical methods and assumptions, it is not possible to assess the accuracy of the DEIS/EIR simulations. For example, Bennett (2005), citing Hobbs (2004), reports that delta smelt in northern Suisun Bay adjacent to shoal habitats have higher feeding success. Increased SDIP diversions with Alternative 2 have the potential to result in significant losses of rearing in the late summer and fall period as shown in Figures 6.1-17 and 6.1-18. This loss of rearing habitat, rather than being insignificant as described in the DEIS/EIR, might be critical to the development of gonadal material prior to spawning.

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6.1-94 (cont.)	Compared to Alternative 1, the change in estuarine rearing habitat area attributable to water supply operations under Alternative 2A is small (generally less than 5%) and infrequent for most years during all months. Most of the time, rearing habitat area is the same for Alternative 1 and Alternative 2A. Given the few rearing months affected and the relatively small change in estuarine rearing habitat area, effects on survival of delta smelt would be less than significant. No mitigation is required.	Bennett (2005) found that in the fall during wetter years the Delta smelt migrated into the channels and sloughs in Suisun Marsh and the lower Napa River. He notes that growth during this period is very slow and difficult to measure otoliths (J. Hobbs, UCD, pers. comm.), implying that energy may be allocated to gonad development before the spawning season. Bennett concluded in his 2005 review of the status of Delta smelt that is uncertain what currently constitutes spawning habitat for delta smelt, and there is little monitoring to ascertain certain what habitat characteristics would benefit to the population.
6.1-95	**Impact Fish-62: Operations-Related Decline in Migration Habitat Conditions for Delta Smelt.** Water supply operations under Alternative 2A would change SWP and CVP pumping and Delta inflow and outflow (Figures 6.1-6 and 6.1-9). Net flow in the Delta channels could be affected (Section 5.2, Delta Tidal Hydraulics). Although net channel flows have been identified as important because they move fish downstream (U.S. Fish and Wildlife Service 1996), actual effects of net flow changes on the movement of adult, larvae, and juvenile delta smelt have not been demonstrated. Given that net flow changes attributable to water supply operations are small relative to tidal flows, effects on delta smelt migration habitat are considered less than significant.	

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6.1-95	**Impact Fish-63: Operations-Related Increases in SWP Pumping and Resulting Entrainment Losses of Delta Smelt.** Under Alternative 1, simulated SWP and CVP pumping results in annual estimated salvage ranging from about 7,000 to 35,000 delta smelt (Figure 6.1-19). Most delta smelt (about 90%) are salvaged during May–June (Appendix J). However, adult delta smelt are entrained in small numbers through the winter and early spring months of November through March. Salvage generally increases under Alternative 2A, approaching a 15–40% increase in some years (Figure 6.1-19). The increased salvage is primarily attributable to increased SWP pumping in June (Figure 6.1- 20), although increased pumping also contributes to increased entrainment in May and July. The increased pumping under Alternative 2A in the winter and early spring months of November–March has a potentially large impact on the population because these delta smelt are adults moving into spawning habitat. Gate closure causes additional net flow to be drawn from the San Joaquin River and south through Old River, Middle River, and Turner Cut (Section 5.2, Delta Tidal Hydraulics). The increased net flow toward the south may increase entrainment of larval and juvenile delta smelt (Appendix J).	The DEIS/EIR does not provide adequate information on potential SDIP effects on changes in the spatial or temporal location of X2 to assess the significance of effects nor the adequacy of proposed mitigation to minimize the significance of the changes in delta smelt spawning and rearing habitat. Assessment of entrainment effects based only on delta smelt larger than 20 mm is scientifically inaccurate and does not meet minimum EPA standards to characterize water intake entrainment effects. The DEIS/EIR does not assess entrainment effects on delta smelt population or population dynamics.	CCWD1-115

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6.1-95 (cont.)	The effects of gate closure are similar for Alternatives 1 and 2A, but the fish control gate constructed under Alternative 2A would be closed from April 1 through May 31. During the May–July period, salvage consists mostly of 0.79–1.18-inch (20–30-mm) juveniles (Figure 6.1-21). Based on the 20-mm survey data, most juvenile smelt occur in Suisun Bay and near the confluence of the Sacramento and San Joaquin Rivers during April–July. However, a substantial proportion of the population may occur within the central and south Delta. Delta smelt larvae and juveniles within the central and south Delta are vulnerable to entrainment by SWP and CVP pumping. An increase in salvage ranging from 15% to 35% may represent substantial but unknown proportions of the annual larval and juvenile production. Given the limited understanding of smelt abundance and distribution and of factors affecting the population abundance, the impact of increased SWP pumping in the winter and early spring months of November–March when adult delta smelt are in relatively high densities, as well in as May and June, when the U.S. Department of the Interior, Bureau of Reclamation, and the California Department of Water Resources Fish delta smelt salvage density is highest, is considered significant. Implementing Mitigation Measure Fish-MM-3 would reduce this impact to a less-than significant level.		CCWD1-115

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6.1-97	**Impact Fish-64: Operations-Related Reduction in Food Availability for Delta Smelt.** Many of the same factors affecting rearing habitat area would be expected to affect food production and availability for delta smelt. As discussed above for rearing habitat area, changes in water supply operations potentially affect estuarine rearing habitat area for delta smelt in the Delta and Suisun Bay. Location of rearing habitat area downstream of the Delta is believed to increase food availability for delta smelt (U.S. Fish and Wildlife Service 1996). The broad and shallow areas of Suisun Bay allow algae to grow and reproduce rapidly, providing food for zooplankton, which are food for delta smelt. Greater rearing habitat area for delta smelt coincides with location downstream of the Delta and within the areas of higher zooplankton production.	The DEIS/EIR assessment in Impact Fish–64 reflects a number of the concerns raised in the comments above regarding the need to examine the impacts on habitat in specific geographic approach and again points to the potentially critical nature of the downstream rearing habitat. The discussion needs to include a detailed assessment regarding the quality and quantity of food that is important for Delta smelt rearing, and the coincidence of these food supplies with a downstream location of X2. It cannot be simply asserted that the 5 percent loss (movement upstream) would be less than significant (especially given the present condition of the Delta smelt population), nor is it reasonable to expect that a reduction in exports of food supplies in the south delta (Mitigation Measure Fish-MM-3) would adequately offset the loss of food supply in downstream rearing habitats of Suisun Bay. Restoration and protection of Delta smelt habitat is the appropriate form of mitigation. It has the advantage of creating like kind and in place mitigation of the loss of habitat impacts. The DEIS/EIR needs to be revised to consider this measure.	CCWD1-116

Ms. Sharon McHale
Mr. Paul Marshall
Draft EIS/EIR for the South Delta Improvements Program
February 7, 2006
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Page	SDIP DEIS/EIR	Comment	
6.1-97 (cont.)	The change in estuarine rearing habitat area under Alternative 2A is small (generally less than 5%) and infrequent for most years during all months (Figure 6.1-18). Given the few rearing months affected, especially during April through August, and the relatively small change in estuarine rearing habitat area, the impact on food availability for delta smelt would be less than significant. Delta smelt feed on zooplankton; consequently prey organisms may be subject to entrainment effects similar to those described above for larval and juvenile delta smelt within the central and south Delta. Entrainment loss of food organisms and its effect on delta smelt productivity is currently unknown. The effect, however, is not clearly separable from entrainment loss of delta smelt. The impact of entrainment on food is assumed to be encompassed by the impact described for delta smelt (Impact Fish-63). Mitigation Measure Fish-MM-3 would reduce the entrainment impacts on food organisms for delta smelt to less than significant.	The DEIS/EIR proposes reduction of salvaged Delta smelt (Mitigation Measure Fish-MM-3) as an offset to loss of the smelt's rearing habitat, but this would not be as effective as kind or in place mitigation. It is not known how to equate either a salvaged Delta smelt or a Delta smelt that doesn't have to be salvaged to the loss of maximum Delta smelt rearing habitat. The DEIS/EIR should describe this nexus and include a rationale of the potential offset and method to evaluate its value to mitigate lost habitat.	CCWD1-116

Responses to Comments

CCWD1-1

Possible negative impacts from the SDIP on CCWD's drinking water quality are of great concern to DWR and Reclamation. The impact assessment described in Section 5.3 includes specific evaluation of EC changes at both the Rock Slough and Old River (Los Vaqueros) intakes. The effects of the SDIP on salinity (EC) at the two CCWD intakes are fully evaluated and described for both Stage 1 and Stage 2. These changes were determined to be less than significant because although there were some relatively large monthly EC changes, the overall EC increase is less than 5% of the baseline average EC at each location. This is not expected to change the taste of the drinking water nor will it substantially increase the production of disinfection by-products (DBPs) at the CCWD drinking water treatment plants.

CCWD1-2

The slight increase in salinity caused by the SDIP is not expected to substantially reduce the value of the Los Vaqueros Reservoir for water quality blending. The local salinity control projects that have been funded by CALFED and the SWP Contractors to directly benefit CCWD customers are expected to adequately compensate for the small salinity increases that will result from allowing more San Joaquin River water to flow past the head of Old River as a result of SDIP Stage 1.

CCWD1-3

SDIP impacts on drinking water are fully evaluated by comparing DSM2 modeling results for EC and dissolved organic carbon (DOC) at the CCWD water intakes. The methodology for this Delta water quality modeling is described in Appendix D. The DBP precursor, bromide, can be accurately estimated from the changes in EC. Because the average EC will not change by more than 5% of the baseline EC value, the change in bromide will also be less than 5%. The modeling results indicate that the DOC values at CCWD intakes will change by less than 1%. Therefore, the SDIP is expected to have a less-than-significant effect on drinking water quality related to DBP health issues.

CCWD1-4

Both monthly change criteria and long-term change criteria for salinity (EC) at the CCWD intakes were evaluated. The daily changes in the DSM2-EC results for the SDIP are exaggerated by the use of monthly CALSIM flows for each alternative. In some years, the CALSIM model uses a slightly different schedule

for meeting the 150-mg/l chloride standard at Rock Slough. Simulated changes in monthly outflow have a large effect on some of the daily EC values. These monthly differences in the CALSIM values will result in some months with substantially reduced EC. It is appropriate to consider the overall change in average EC as a way to integrate these modeled changes in monthly average EC values. The actual EC changes that would occur with the SDIP will be constrained by the actual outflow and EC objectives in D-1641 that will be achieved by Reclamation and DWR operation of the Delta.

CCWD1-5

Please see Master Response G, *No-Barrier Conditions Compared with the No-Action Baseline.*

CCWD1-6

Any future water transfers made possible by the increased SWP diversion limit under SDIP Stage 2 would be conditioned with appropriate "carriage water" requirements to increase Delta outflow, so that there should be no increase in EC at CCWD intakes resulting from these water transfers.

CCWD1-7

As described in Chapter 1 of the Draft EIS/EIR, the increase to 10,300 cfs at SWP Banks is a possible future action that DWR may independently decide to pursue. It would require that other improvements, such as an improved fish screen at the intake location, be implemented. This future increase, therefore, is not a part of the SDIP. Because it is a reasonably foreseeable project, it has been described in the cumulative analysis as a CALFED conveyance project. It is not included in the OCAP and not included in the 2020 CALSIM modeling results.

CCWD1-8 and CCWD1-9

Same response as CCWD1-1 and CCWD1-4.

CCWD1-10

The CALFED program included several projects to improve drinking water quality in the Delta. Two of these projects, Byron Tract and Veale Tract agricultural drainage relocations, have been implemented (January 2006) with assistance from SWP Contractors and CALFED funding. Additional improvements, such as those described in the DIP, will be implemented in the

future, and could occur before or during implementation of Stage 2. Also, the website for the CALFED drinking water quality program lists several accomplishments that have resulted in improved water quality in the Delta.

CCWD1-11, CCWD1-12, and CCWD1-13

Please see Master Response G, *No-Barrier Conditions Compared with the No-Action Baseline.*

CCWD1-14

The Temporary Barriers Program is likely to continue regardless of whether the permanent gates are constructed. Therefore, they are not an action analyzed in the Draft EIS/EIR. It is sometimes difficult to limit the evaluation to the proposed alternatives; this is the purpose of the cumulative analysis. The desire to consider past baselines to gain perspective and track progress is also understandable; however, it is not required by CEQA or NEPA.

CCWD1-15

DWR and Reclamation are pursuing an increase at SWP Banks to 8,500 cfs prior to the maximum increase to 10,300 cfs, exactly as described in the CALFED ROD in a balanced stepwise manner. As described in the CALFED ROD and Chapter 1 of the Draft EIS/EIR, the increase to 10,300 cfs on a regular basis would require major improvements to the salvage facilities in the south Delta to offset the impacts on fish of the increased exports. Those actions are not expected to be implemented in the near future, and approval for pumping at 10,300 remains uncertain. Text on page 1-6 has been modified to clarify that these improvements have not yet been formulated.

CCWD1-16

SDIP Stage 2 will allow for increased water transfers in some years. However, approval for future water transfers will require some additional environmental documentation and State Water Board approval. The CALSIM modeling has identified the potential for transfers through the Delta, but the amount of future transfers is not known and could not be included in the CALSIM or DSM2 modeling of the SDIP Stage 2 alternatives.

Delta impacts from increased water transfers on fish are avoided by allowing transfers only during the period of July–September, when fish entrainment has been historically lowest. Delta impacts from increased water transfers on water

quality are avoided by requiring appropriate "carriage water" to increase Delta outflow during periods of increased Delta exports for water transfers.

CCWD1-17

Water quality effects from additional water transfers can be fully mitigated with slightly increased Delta outflow; this is the common meaning of "carriage water" that has been required for all water transfers approved in the past 15 years. The environmental documentation for State Water Board approval of these future water transfers will be similar and will allow the carriage water requirements to be reviewed and verified. New modeling of salinity intrusion effects is not required.

CCWD1-18

Please see response to comment CCWD1-4.

CCWD1-19

The comparison of salinity change to natural variability is an important concept in environmental evaluations. A change cannot be considered significant if the environment already experiences that change without harm, as part of the natural fluctuations. There is a large seasonal variation in Delta salinity, controlled largely by the fluctuations in Delta outflow. This provides an appropriate measure for the monthly significance criteria.

CCWD1-20

It is not expected that SDIP Stage 1 operations of the tidal gates or Stage 2 increased SWP daily pumping will cause significant daily salinity changes that are masked by monthly averages used for impact assessment. Monthly EC was evaluated to track the seasonal changes in salinity and other water quality parameters, as well as the monthly EC changes caused by simulated changes in CVP and SWP pumping and Delta outflow. Because there are some monthly EC increases and some monthly EC decreases, the overall changes were evaluated with the long-term significance criteria (i.e., 5% increase in average EC). . The large daily changes found in the DSM2 EC results are likely the result of large monthly changes in CALSIM, and do not represent actual daily changes in Delta outflow that would cause salinity changes at CCWD intakes. The salinity at CCWD intakes responds to the average Delta outflow, with a time scale that is at least 2 weeks and can be even longer when the outflow is lower (i.e., CCWD G-model theory). Daily EC data from Jersey Point and Old River at Bacon Island (or chloride data from Rock Slough and Old River) show that there is little daily

fluctuation in salinity, although the seasonal variation is large (See Figure D-132 and D-154).

CCWD1-21

Both a monthly change criteria (i.e., 10% of EC objective) and a long-term change criteria (i.e., 5% of baseline EC) are used to evaluate simulated EC changes from SDIP Stage 1 and Stage 2 alternatives. The monthly changes are examined, and the monthly significance criteria are used to identify what fraction of the monthly changes exceeds the monthly criteria. Figures 5.3-14 and 5.3-15 show that no significant monthly changes are expected during Stage 1 of the SDIP. Figures 5.3-25 and 5.3-26 show that some monthly changes of more than the 100-µS/cm monthly criteria were simulated for Stage 2. These monthly changes in EC were generally caused by differences in the CALSIM-estimated Delta outflow values that resulted from different schedules (i.e., early or late) for meeting the 150 mg/l chloride objective at Rock Slough in 1976 and 1977. These same years had monthly changes that were very large reductions in EC. The changes in other years were less than the 100-µS/cm EC monthly criteria. Because monthly increases and monthly decreases may occur within the same year, the overall change criteria (i.e., 5% of baseline EC) was used to evaluate the overall impact significance for changes in EC at CCWD's intakes.

CCWD's footnote is correct. Because there are no EC objectives specified at the Old River (Los Vaqueros) intake, the appropriate EC monthly criteria should be not 100 µS/cm, but 10% of the average baseline EC of about 470 µS/cm. The monthly criteria should therefore be 47 µS/cm. Figure 5.3-15 indicates that no monthly changes of greater than 47 µS/cm are expected for SDIP Stage 1. Figure 5.3-26 indicates that the correct monthly criteria will be exceeded in several more months than would the 100 µS/cm criteria. Nevertheless, the long-term criteria (5% of the average baseline EC, 24 µS/cm) is not exceeded and the overall impact on EC at the Los Vaqueros intake is considered to be less-than-significant.

CCWD1-22

The long-term change criterion of 5% is considered appropriate for salinity changes in the Delta, because the monthly changes can be both positive and negative compared to the baseline monthly conditions. The applicable salinity objectives already limit the maximum EC and chloride values at Rock Slough. The low salinity values during high flows are not expected to change. CCWD has implemented other CALFED-funded actions that are expected to adequately compensate for this moderate increase in average salinity.

CCWD1-23

Monthly average changes were not used to evaluate the significance of water quality changes caused by SDIP because some monthly changes are expected to be positive while other monthly changes are expected to be negative. The change in average EC was used to evaluate the overall significance of salinity changes caused by the SDIP. As CCWD has indicated, the greatest changes in Delta salinity are expected in July and August, because September and October already have very low Delta outflow requirements, with relatively high salinity that approach the limits and cannot be increased.

CCWD1-24

DWR and Reclamation appreciate the valuable asset that Los Vaqueros represents for CCWD, with water supply intakes in the upper end of the San Francisco estuary. Reclamation constructed the Contra Costa County (CCC) Rock Slough intake to isolate CCWD from the salinity intrusion. Reclamation built the DCC to supply lower-salinity Sacramento River water to the CCC and the Tracy Pumping Plant. It is unlikely that the SDIP will change salinity during periods of high outflow when Los Vaqueros Reservoir will be filled with water of less than 50 mg/l chloride. However, changes in the operations of Los Vaqueros Reservoir to meet the CCWD objective of 65 mg/l chloride in the deliveries is not a direct environmental impact of the SDIP. Higher EC values may require more of Los Vaqueros Reservoir releases to be used. But the direct impacts maintained EC values within 10 µS/cm (2.1%) for 2001 and within 17 µS/cm (3.6%) for 2020 of the baseline values (Table 5.3-3). This is a less-than-significant change in EC.

CCWD1-25

CCWD would operate Los Vaqueros Reservoir to provide emergency water supply independent from Delta salinity concerns. The SDIP will not change the need for this emergency water to remain in Los Vaqueros Reservoir. Because these emergency storage targets are pre-specified by CCWD, the changes in summer salinity caused by SDIP will not change the emergency storage levels. The SDIP will not change the salinity of water used to fill Los Vaqueros Reservoir.

CCWD1-26

As described in Section 5.3, the EC criteria also provide an appropriate measure for changes in minerals, such as bromide. The use of ozone for disinfection at CCWD treatment plants is an appropriate improvement for water supply intakes located in the upper estuary, with substantial risk of high bromide concentrations from salinity intrusion.

CCWD1-27

The SDIP proposed gate operations have been adjusted to provide a maximum of circulation within the south Delta channels without the use of energy-consuming pumps. The head of Old River is operated to provide a diversion of 500 cfs, increasing the San Joaquin River flow past Stockton; this represents the maximum likely salinity effect at the CCWD intake at Old River.

CCWD1-28

Please see response to comment CCWD1-17.

CCWD1-29

Please see Master Response M, *Interim Operations*.

CCWD1-30

The effects of operating the tidal gates during the winter are already included in the SDIP alternatives. The DSM2 modeling assumed tidal gates would be operated in most months, unless San Joaquin River flows were high. Appendix D describes the gate operating assumptions.

CCWD1-31

There was no evaluation of effects from potential toxic materials in the San Joaquin River, because there are not sufficient data to provide the basis for a quantitative assessment. EC was used to indicate the effects of the SDIP on the fraction of the San Joaquin River water at the CCWD intakes. There may be toxic materials in the San Joaquin River; but it was assumed that the CCWD water treatment plants will protect the drinking water quality.

CCWD1-32

As described in the Draft EIS/EIR, dredging south Delta channels will have no long-term effect on water quality at CCWD intakes; no new sources of pollutants will be introduced or redirected toward CCWD intakes.

CCWD1-33 and CCWD1-34

Please see Master Response B, *Relationship between the South Delta improvements Program and the Pelagic Organism Decline*.

CCWD1-35

The likely effects on delta smelt are difficult to evaluate, because little is known about the response of this fish to tidal channel flows. However, the permanent tidal gates will be open each day during flood tide periods (i.e., upstream flow). This should reduce any effects on fish movement that may be caused by the temporary barriers. Specific effects on delta smelt movement, delta smelt food, or predation are presently unknown and, therefore, cannot be evaluated.

CCWD1-36

There are no likely effects of temporary barriers in the late summer or early fall on delta smelt because delta smelt spawning is thought to be limited to temperatures of less than 20ºC, and juvenile delta smelt do not remain in the south Delta for more than a month after temperatures approach 20ºC. CVP and SWP salvage records indicate that substantial densities of delta smelt are only rarely observed after mid-June. See, for example, Appendix B Figures B-17, B-20, B-23, B-26, and B-29.

CCWD1-37

The possible effects of net flow on the movement of delta smelt are presently unknown and cannot be evaluated. These uncertainties relate to the current condition as well as the potential future impacts of the SDIP. CEQA requires decisions using best available information. These uncertainties and possible impacts on smelt are acknowledged, leading to Fish MM-3. Please also see Master Response O, *Gate Operations Review Team*.

CCWD1-38

Please see Master Response E, *Reliance on Expanded Environmental Water Account Actions for Fish Entrainment Reduction*.

CCWD1-39

Impacts of proposed operations on the food availability for delta smelt are addressed in Impact Fish-64. Section 6.1 includes potential impacts on the

location of X2 (salinity gradient) during the February–June period. The upstream location of the X2 salinity gradient is controlled by the EC and chloride objectives for the remainder of the year. No relationships have been identified between existing or SDIP operations and turbidity or temperature. Please also see Master Response B, *Relationship between the South Delta improvements Program and the Pelagic Organism Decline*.

CCWD1-40

Potential future SWP pumping with a 10,300 cfs limit is only generally discussed in the cumulative analysis, because there is no basis for establishing operational guidelines for this increased pumping limit. The SDIP Stage 2 analysis will provide additional information about the potential environmental impacts of increased SWP pumping. Please also see Master Response H, *Cumulative Impact Baseline Conditions.*

CCWD1-41

The Sacramento County Regional Wastewater Treatment Plant expansion should have been included in the cumulative evaluation of water quality impacts.

The SDIP is consistent with the CALFED conveyance actions. The CALFED ROD called for the implementation of the Byron Tract–Old River and the Veale Tract–Rock Slough Agricultural Drainage Improvements prior to construction of permanent operable gates. These two projects were completed in 2006 with funding assistance from CALFED and SWP Water Contractors. Progress on water quality actions is not lagging behind the SDIP Stage 1 implementation of local water quality and fish protection actions.

CCWD1-42

These potential transfers were not included in the water quality analyses because they cannot be specified in the CALSIM modeling. Water transfers would change the inflow by more than the increased export, to allow the outflow to also increase so that salinity intrusion would remain unchanged.

Any future water transfers made possible by the increased SWP diversion limit under SDIP Stage 2 would be conditioned with appropriate “carriage water” requirements to increase Delta outflow, so that there should be no increase in EC at CCWD intakes resulting from these water transfers.

CCWD1-43

Please see Master Response G, *No-Barrier Conditions compared with the No-Action Baseline*.

CCWD1-44

The CALFED program included several projects to improve drinking water quality in the Delta. Two of these projects, Byron Tract and Veale Tract agricultural drainage relocations, have been implemented (January 2006) with assistance from SWP Contractors and CALFED funding. Additional improvements, such as those described in the DIP, will be implemented in the future, and could occur before or during implementation of Stage 2. Also, the website for the CALFED drinking water quality program lists several accomplishments that have resulted in improved water quality in the Delta.

CCWD1-45

Please see Master Response G, *No-Barrier Conditions compared with the No-Action Baseline*.

CCWD1-46

The text has been revised per your comment. Please see Master Response M, *Interim Operations*. The potential effects on salinity of 8,500 cfs during the December 15–March 15 period are evaluated for SDIP Alternative 2A, Stage 2. No significant effects were identified.

CCWD1-47

The 3-day diversion limit of 9,000 cfs will allow for operational variations caused by tidal conditions. No water quality effects from these short-term variations in diversions are expected.

CCWD1-48

There was no evaluation of effects from potential toxic materials in the San Joaquin River, because there are not sufficient data to provide the basis for a quantitative assessment. EC was used to indicate the effects of the SDIP on the fraction of the San Joaquin River water at the CCWD intakes. There may be toxic materials in the San Joaquin River; but it was assumed that the CCWD water treatment plants will protect the drinking water quality.

CCWD1-49

DSM2 modeling included year-round operation of the tidal gates. Potential water quality effects are already evaluated.

CCWD1-50

The baseline DSM2 simulations use the existing channel sections in Middle River. The effects of the Middle River dredging wereincluded in the DSM2 modeling of the Stage 1 and Stage 2 SDIP alternatives. Additional modeling is being conducted in cooperation with CDWA and SDWA engineers, to modify the planned dredging to provide flood-neutral results. The simulated salinity effects from the SDIP gate operations and Middle River dredging are included in the results shown in the Draft EIS/EIR (Table 5.3-1).

CCWD1-51

The 2002 Benchmark studies were completed when the SDIP evaluations were initiated and this version of CALSIM provided a reasonable modeling analysis for the SDIP alternatives. The OCAP CALSIM studies are similar to the SDIP CALSIM studies. The Trinity River Restoration flow requirements were included in the SDIP studies.

CCWD1-52

The Draft EIS/EIR properly focuses on diversions in the south and central Delta. The SDIP will not change CCWD's senior water rights to divert at Mallard Slough. The salinity at the CCWD Mallard Slough diversion location will not be affected by the SDIP.

CCWD1-53

Any future water transfers made possible by the increased SWP diversion limit under SDIP Stage 2 would be conditioned with appropriate "carriage water" requirements to increase Delta outflow, so that there should be no increase in EC at CCWD intakes resulting from these water transfers.

CCWD1-54

The use of 1994 deliveries, which was the last year of the CALSIM modeling results, provides an example of recent CVP and SWP seasonal delivery patterns. It is true that Delta operations have changed to include additional requirements

since 1995. However, CVP and SWP seasonal demands for water supply deliveries, and the need for San Luis Reservoir storage releases to satisfy the peak demands in the summer months, are the same.

CCWD1-55

The assumption that SDIP will have no direct effects on CCWD water supply, as stated in Section 5.1-33 refers to the amount of water supply available to CCWD at the applicable water quality objectives specified in D-1641. The possible effects on CCWD salinity delivery targets (i.e., 65 mg/l chloride) are not evaluated in the SDIP Draft EIS/EIR.

CCWD1-56

Please see Master Response G, *No-Barrier Conditions compared with the No-Action Baseline*.

CCWD1-57

Please see Master Response M, *Interim Operations*.

CCWD1-58

Please see response to comment CCWD1-6.

CCWD1-59 and CCWD1-60

These August 1997 comparative simulations are shown to illustrate the effects of additional pumping on tidal stage and flow in south Delta channels. Please also see Master Response G, *No-Barrier Conditions compared with the No-Action Baseline*.

CCWD1-61

A 10% reduction in tidal flow at a location, indicative of reduced tidal flushing, was selected as an appropriate significance criterion for changes in tidal flow. Reductions in tidal circulation that also increase the salinity were also evaluated in SDIP EIS/EIR Section 5.3, Water Quality, with the DSM2 EC changes, where another monthly significance criteria of 10% of the established EC criteria (or 10% of the baseline EC) was applied to determine significant impacts.

CCWD1-62

The graphs showing monthly minimum, average, and maximum tidal stage and flow are appropriate and enabled CCWD to identify the slight changes in maximum tidal flows that were simulated by the DSM2 model. The DSM2 modeling showed no significant EC changes in Old River at State Route 4 for the SDIP Stage 1 (Figure 5.3-15).

CCWD1-63

Reduced net flows in Old River caused by more pumping will not lead to increased salinity at Rock Slough, if the Delta outflow and net flow at Jersey Point are sufficient to counteract the salinity intrusion caused by tidal dispersion. The DSM2 modeling showed that the changes in EC at the CCWD Old River intake were less than significant for SDIP Alternative 2A Stage 2 (Figure 5.3-26).

CCWD1-64

All of the DSM2 results for each SDIP alternative for both the 2001 and 2020 conditions were simulated and evaluated, and are available from the SDIP ftp site, which can be accessed from the SDIP website. The 2001 results described in the Draft EIS/EIR provide full disclosure of the small changes in tidal flows and stages. Table 5.2-6 provides a summary of the results for 2001 and 2020 conditions; they are very similar.

CCWD1-65

CCWD has successfully completed these important water quality projects to reduce the influence of the Veale Tract and Byron Tract drainage on CCWD water supply intakes. CCWD received significant contributions from the CALFED Program and from the State Water Contractors. The details of the analyses referenced by CCWD regarding the water quality benefits achieved with these projects have not been made available to DWR or Reclamation. Discussions with CCWD regarding the relative benefits and impacts from SDIP will continue with the hope that an agreement can be reached. Regardless of any agreement, the benefits and salinity reductions at CCWD intakes should be quantified with monitoring and modeling analysis. The effects of the SDIP Stage 1 on the average EC at the Los Vaqueros intake were modeled to be an average increase of 0.5%. A slight benefit at the Rock Slough intake was simulated to be negligible (–0.2% change in average EC) It is very possible that the benefits from the CCWD water quality projects are substantial in comparison to the small increases in salinity caused by the temporary barriers or the future tidal gate operations.

CCWD1-66

Please see response to comment CCWD1-20.

CCWD1-67

See responses to CCWD1-20, 21, and 23. According to the equations given in Attachment G, an EC change of 100 µS/cm would be less than 20 mg/l chloride if the EC was less than 600 µS/cm and an EC change of 100 µS/cm would never be as high as 28 mg/l, as stated in the examples given in this comment.

CCWD1-68

Please see responses to comments CCWD1-19 and CCWD1-22.

CCWD1-69

Please see response to comment CCWD1-21.

CCWD1-70

The changes in EC that result from the SDIP tidal gates are shown for all locations, including CCWD Old River and Rock Slough intakes. The reasons for the reduced EC within the south Delta channels, resulting from reduced influence of San Joaquin River water, and increased influence from Sacramento River water are fully described in Section 5.3. The effects on the EC at the CCWD Rock Slough and Old River intakes are fully described.

CCWD1-71

Please see responses to comments CCWD1-21 and CCWD1-22.

CCWD1-72

Please see response to comment CCWD1-24.

CCWD1-73

Please see Master Response M, *Interim Operations*.

CCWD1-74

Information on habitat relationships and controlling factors for delta smelt is limited. The assumptions made regarding possible project impacts on smelt were based on the best available information. The underlying hypothesis is that smelt rearing habitat is defined by the salinity gradient; hence the change in area of habitat can be estimated by the projected change in X2. Results from the water quality monitoring at the temporary barrier locations can be found on the DWR temporary barrier website: <http://sdelta.water.ca.gov>.

CCWD1-75

The effects of dredging and gate construction are fully evaluated.

CCWD1-76

Please see Master Response O, *Gate Operations Review Team*.

CCWD1-77

The impact of construction of the proposed gates and dredging are presumed to be low because the baseline survival of larvae spawned in the south Delta is low, and the footprint of the proposed facilities is similar to that of the existing temporary barriers. Dredging will be scheduled within approved working periods. These small potential effects will be considered by USFWS in the SDIP BO.

CCWD1-78

There are significant limitations on knowledge of the environmental requirements and factors controlling spawning habitat for delta smelt. No known relationship exists between any environmental variables and spawning locations; therefore, no impact evaluation is possible.

CCWD1-79

Changes in X2 are properly used to identify changes in rearing habitat for delta smelt.

CCWD1-80

The ebb tidal flows on Old and Middle River are reduced but not eliminated by the existing south Delta pumping (See Figure 5.2-47). There may be unknown effects of the net flows on migration of delta smelt, but the small changes in net flow caused by the SDIP will not likely produce a significant impact on these relationships. These relationships for delta smelt can be further considered during the Stage 2 evaluation.

CCWD1-81

Please see Master Response E, *Reliance on Expanded Environmental Water Account Actions for Fish Entrainment Reduction.*

CCWD1-82

Please see response to comment CCWD1-39.

CCWD1-83

A description of the Operations and Fisheries Forum has been added to Chapter 8 of the SDIP Draft EIS/EIR per your comment. Please also see Master Response O, *Gate Operations Review Team.*

CCWD1-84

Language on Page 8-6 will be revised as follows:

> The Water Operations Management Team (WOMT) is a group composed of executives from DWR, Reclamation, DFG, USFWS, and NMFS. The group has the responsibility of making decisions about CVP and SWP operations for the following week based on proposed project operations. The Data Assessment Team (DAT) is an advisory group composed of biologists and SWP and CVP operations staff. This group meets on an as needed basis to make agency recommendations to WOMT. The DAT identifies abundance and distribution of special-status species to determine if changes in operation and pumping would reduce take. This input is presented to the WOMT for consideration in making final decisions about operations of CVP and SWP facilities. Although the DAT and another related group, the Operations and Fisheries Forum, invite stakeholders to participate, the WOMT does not normally include stakeholders; however, stakeholders may be invited to present information on a specific subject for the meeting. Implementation of the SDIP would require decisions by the WOMT regarding operations of the gates.

CCWD1-85

SDIP assumes that water delivered to CVP and SWP contractors will be used as efficiently as possible to meet established demands.

CCWD1-86

SDIP is not a water-use efficiency project.

CCWD1-87

Excess Delta outflows, above flow objectives established in D-1641 to protect beneficial uses, may reduce salinity and indirectly benefit agricultural and municipal water uses. SDIP will allow slightly more water to be exported for beneficial uses while meeting all other established flow and water quality objectives.

CCWD1-88 to CCWD1-90

More discussion of water rights was given in Section 5.1. The SDIP will have no effects on CCWD's CVP contracts or senior water rights for diversions at its intakes. SDIP will have no effects on the EC and chloride objectives at CCWD's intakes. The CVP and SWP Delta operations will provide water quality that meets the D-1641 EC and chloride objectives.

CCWD1-91

Chapter 9 of the Draft EIS/EIR describes the SDIP assumptions related to growth-inducing effects from the increased CVP and SWP deliveries. No assumptions of increased demands beyond CVP and SWP contract amounts are included in the CALSIM simulations.

CCWD1-92

The water transfer potential is evaluated for both 2001 and 2020 conditions in Section 5.1. The 2020 results are similar to those given in Table 9-4 of the Draft EIS/EIR.

CCWD1-93

The Draft EIS/EIR assumes that groundwater and other local deliveries will be used to support existing agriculture when SWP and CVP cannot deliver full contract amounts.

CCWD1-94

The description of the Los Vaqueros Expansion Project's ability to increase the water available for exports has been eliminated from page 10-8 per your comment.

CCWD1-95

The description of the Alternative Intake Project is listed as the Relocation of M&I Intake on Page 10-17 of the SDIP Draft EIS/EIR.

CCWD1-96

The SDIP Draft EIS/EIR acknowledges that there would be a slight increase in CVP and SWP exports for the 2020 level of demand compared to the 2001 level of demand. The change is caused by the CALSIM assumption that the SWP demands will be closer to full Table A contract amounts in more years with 2020 demands.

CCWD1-97

The SDIP Draft EIS/EIR assumes that operations of new upstream reservoirs will follow the balanced CALFED approach to improve fish habitat, improve Delta water quality, and increase water supply.

CCWD1-98

No other projects are planned that will change or influence the basic tidal hydraulic conditions in the south Delta channels; no cumulative effects are expected. The direct effects of the SDIP are fully disclosed in Section 5.2.

CCWD1-99

Transfers in dry years will result in net channel flows that are well within the normal range of conditions; there will therefore be no cumulative effects on tidal hydraulics.

CCWD1-100

Please see response to comment CCWD1-6. The SDIP cumulative evaluation of salinity (EC) assumed that the existing D-1641 EC objectives (i.e., 0.7/1.0) would remain in effect for Vernalis, Brandt Bridge, Middle River at Mowry Bridge, and Old River at Tracy Boulevard Bridge.

CCWD1-101

The SDIP Draft EIS/EIR has not evaluated the possible indirect effects of the SDIP on increased wastewater effluent, because SDIP will not change the water supply for any City with substantial treated wastewater discharge to the Delta. Please also see Master Response Q, *Effects of the South Delta Improvements Program on San Joaquin River Flow and Salinity*.

CCWD1-102

It is possible that a future 10,300-cfs limit will allow pumping to be shifted to periods of very high outflow and reduce the necessary pumping at other times. The effects on salinity at CCWD intake will be fully evaluated before such a project is implemented.

CCWD1-103

Please see Master Response F, *Relationship between South Delta Improvements Program and Climate Change*.

CCWD1-104

Please see Master Response D, *Developing and Screening Alternatives Considered in the South Delta Improvements Program Draft EIS/EIR*.

CCWD1-105

The SDIP Draft EIS/EIR analysis provides a balanced assessment of impacts across the set of indicator species. However, the state of knowledge for species such as delta smelt is much more limited than for other species, especially salmon and steelhead. As a result, there is more quantitative information on the effects of the SDIP on salmonids, but there is adequate discussion of the impacts on delta smelt that reflects the available knowledge.

CCWD1-106 to CCWD1-108

The SDIP Draft EIS/EIR evaluates the changes in X2 as an index of changes in the unknown specific habitat areas for delta smelt rearing and food supply. The qualitative discussion of other potential effects on delta smelt is based on the best available information.

The salinity changes in the western Delta are generally indicated by the shifts in the location of the 2 parts per thousand (ppt) salinity gradient (i.e., X2). The 2001 and 2002 baseline X2 values are given in Appendix I (Table I-27). The pattern of X2 follows the Delta outflow, with lowest X2 values occurring in months with high outflow, and highest X2 values in months with low outflow. The position of X2 in the months of February through June is regulated under D-1641. All SDIP Stage 2 alternatives will satisfy these X2 requirements, which have been mandated by the State Water Board for the protection of delta smelt and other estuarine species.

The small changes simulated with CALSIM for the SDIP Stage 2 alternatives can be obtained from the summary file of CALSIM results, available from the SDIP ftp site. The fish habitat assessment used these monthly values to determine that the upstream changes in X2 during months of interest were less than significant. The estuarine salinity habitat distribution that is assumed to have some relationship to the rearing habitat of delta smelt and other estuarine species will remain unchanged by SDIP Stage 2 alternatives.

Figure 6.1-17 is based on the availability of salinity habitat between 0.3 and 1.8 psu, as described in Unger (1994). More than 50% of the potential maximum delta smelt salinity habit in almost all months is provided by the 2001 baseline conditions. Figure 6.1-18 indicates that SDIP Alternative 2A stage 2 will reduce this available salinity habitat area by 5% of the maximum area (of about 75 km^2) in less than 10% of the years for the months of October–March. No further analyses can be made using these monthly X2 values or corresponding habitat areas, because there are no established relationships between monthly X2 values and any life-stage of any estuarine fish species.

CCWD1-109

The relationship between X2 position and available delta smelt habitat was taken from Unger (1994). A look-up table for habitat area as a function of X2 was used to assign monthly habitat areas to the monthly X2 positions.

CCWD1-110 and CCWD1-111

A qualitative discussion of assumed effects from tidal gates and export pumping on south Delta habitat for delta smelt and other fish species is necessary because there are no established or accepted quantitative relationships. South Delta channels are assumed to provide delta smelt spawning and rearing habitat because substantial numbers of adult and juvenile delta smelt are salvaged in most years (lowest salvage in wet years).

CCWD1-112

The CALSIM model results for water years 1922–1994, which included the full range of measured historic inflow hydrology for the Sacramento and San Joaquin River basins, provides the estimates of resulting Delta outflow. The monthly auto-regression equation developed by Kimmerer and Monismith (1992) was used in CALSIM to calculate the end of month X2 location. The D-1641 requirements for X2 location (as a function of previous month runoff) are used in CALSIM to estimate the necessary outflow for February–June. This calculation of monthly X2 values provides a projection of the future range of monthly X2 positions. All of the potential effects on delta smelt and other estuarine fish species are assumed to be dependent on X2.

CCWD1-113

Please see responses to comments CCWD1-106 to CCWD1-108.

CCWD1-114

There are no established relationships between Delta net channel flows and delta smelt movement or migration of juveniles or adults. Therefore, no quantitative assessments of impacts from SDIP Stage 2 alternatives are possible.

CCWD1-115

The SDIP Draft EIS/EIR does not assess entrainment effects on the delta smelt population because no quantitative estimate of delta smelt population are

available, and no quantitative life-stage model for delta smelt is available. Increased entrainment is therefore assumed to be significant, and mitigation (reduced pumping) is required during periods of high fish density.

CCWD1-116 and CCWD1-117

The assumed food source for delta smelt in the vicinity of X2 (i.e., zooplankton) is likely to move with tidal flows and with the general location of X2. There is no expected effect from the movement of X2 (by reduced Delta outflow) on reduced delta smelt food supply.

The restoration and protection of delta smelt habitat for mitigation is constrained by the lack of quantitative criteria for establishing or rating delta smelt habitat. Pelagic organisms such as delta smelt may have a salinity preference, but open water (i.e., pelagic) is limited in physical features that would allow us to identify good habitat.

Reducing exports to reduce entrainment of high densities of delta smelt may allow that volume of water, with its zooplankton food supply, to remain in south Delta channels for several more days, and allow the surviving delta smelt to grow larger and migrate towards the estuary.